

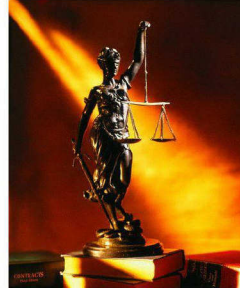
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PROPOSED CLEANUP ACTIONS FOR REMEDIATION OF  
HANFORD WASTE SITES  
CONTAMINATED WITH PLUTONIUM AND CESIUM



VOLUME IV  
MEETING  
Wednesday, July 27, 2011  
Portland State University  
Smith Memorial Student Union, Vanport Room 338  
Portland, Oregon

REPORTED BY: Kimberly McLain, Court Reporter

**VOLUME IV****MEETING****Wednesday, July 27, 2011****7:00 p.m.**

**MR. NILES:** Good evening, everybody. Boy, there was even a little hush there, kind of my cue. Thank you all for coming on a beautiful summer night.

**AUDIENCE MEMBER:** Do you have a mic?

**MR. NILES:** Are we doing better now?

**AUDIENCE:** Yeah.

**MR. NILES:** Can the back of the room hear me all right?

**AUDIENCE MEMBER:** We need to quiet down.

**MR. NILES:** Can the back of the room hear us all right? Yes? Just barely? Do you want to turn that up or do you want me to move that up? Okay. We're good. Thank you, everybody, for coming, especially on a gorgeous summer night like this. Appreciate the turn out that we consistently see in Portland that you come out and offer your opinion on the Hanford cleanup. My name is Ken Niles. I work for the State of Oregon. I head up the State of Oregon's oversight of the Hanford



1 cleanup. I'm playing a different role tonight. I've  
2 been asked to moderate the meeting so that's mostly  
3 the role I'll be playing, although I will step out,  
4 briefly, a little bit from that role just to offer  
5 you some comments on behalf of the State of Oregon.  
6 We're going to try to stick to our schedule. We've  
7 had some difficulties in doing that. But all of us  
8 as speakers can try and be concise and get the  
9 message to you so we can get to the question and  
10 answer period and get to the formal comment period  
11 as well. So that's what we're going to do at least  
12 from our aspect is try and do that.

13           We are here tonight to talk about -- and  
14 I'd like to just spend a moment, just kind of break  
15 it down for you a little bit because Hanford gets so  
16 big and so complicated and all of us are going to  
17 try and make this make sense to you. But we're  
18 talking tonight about 21 different waste sites at  
19 Hanford. And the formal name for those falls into  
20 the CW-5 PW-1, 3 and 6 operable units. And that  
21 makes no sense to anybody and it's not important  
22 that you understand what the differences are between  
23 the PW group and the CW group. We're going to give  
24 you a little bit of background on what that means.  
25 But I think from your standpoint, what's important

1 to know is there's -- we're talking tonight about  
2 really six different groupings of similar waste  
3 sites. One of them which is -- and all of them  
4 received liquid contaminated waste.

5 So there's one group of waste sites called  
6 the Z-Ditches that the Department of Energy and its  
7 regulators are proposing to dig up. There's some  
8 plutonium -- other plutonium contaminated sites  
9 called the Low-Salt waste group that the Department  
10 of Energy is proposing to dig up. There's some  
11 pipelines they are proposing to dig up. There's  
12 some tanks they are proposing to empty which, from  
13 our perspective, is a really good thing all those  
14 things. What I think you'll find more interesting  
15 is the discussion that's going to talk about the  
16 remaining two sets of waste sites.

17 One is three waste sites of plutonium  
18 contaminated waste called the High-Salt waste group  
19 and the other is five waste sites contaminated with  
20 cesium, called the Cesium waste site. So the  
21 Department of Energy and the Environmental  
22 Protection Agency, our speakers tonight, are going  
23 to explain a little bit more about those. That's  
24 really how it all breaks down in terms of what we're  
25 talking about tonight.

1 One quick thing, just kind of a  
2 housekeeping, if you will, I noticed at the end of  
3 the meeting, Gerry asked people how you were  
4 notified, how you found out about the meetings.  
5 There is a form as well at the desk that we'd  
6 appreciate if you could fill it out that asks some  
7 of those same questions and gives, as well, other  
8 feedback about this meeting. I know there's been a  
9 desire when we come to Portland to try and find the  
10 right places. Some of the hotels get very  
11 expensive. Sometimes there's issues with parking  
12 there. We know there's issues, potentially, with  
13 parking here at PSU. So, you know, if there's  
14 places you like, if this doesn't work for whatever  
15 reason, you know, if you would give your feedback in  
16 writing it would be very helpful for us.

17 So with that, let's move on to our first  
18 speaker is the Assistant Manager for the Central  
19 Plateau for the U.S. Department of Energy's Richland  
20 office is J.D. Dowell.

21 **MR. DOWELL:** Can everybody hear me? Is  
22 that good?

23 **AUDIENCE MEMBER:** Would you spell your  
24 last name please.

25 **MR. DOWELL:** J.D. Dowell. D-o-w-e-l-l. I

1 can give you a card as well. I want to reiterate  
2 what Ken, and Gerry, also said at the end of his  
3 brief presentation, and that is that we are here for  
4 public involvement. We're here to hear your  
5 comments and you have to understand that our view  
6 point is that we serve our public. We serve you in  
7 doing this. So the comments that you make tonight,  
8 we're going to take on record. We'll be evaluating  
9 those. We'll be answering those and those answers  
10 will be available to you in the future. And the  
11 near future. We're not talking about years. We're  
12 talking about within weeks, if not, maybe a month or  
13 so. Very important that you come out. This is the  
14 largest group we've had in our fourth brief and  
15 final brief. It's a very important subject, so  
16 thank you all for taking the time out and coming  
17 tonight and I hope the location served all right.

18 So we're here to talk about the process  
19 waste sites of 1, 3 and 6. And the cooling water  
20 waste site 5. That's what CW and PW stand for.  
21 That's the code for those things. This is our  
22 agenda. We've already talked about the purpose.  
23 We're not going to keep reiterating that. Again,  
24 your comments tonight are very important. So I  
25 encourage you to take notes during the topic. You

1 know, get all your concerns out. We'll stay as long  
2 as it takes to hear you out and try and answer all  
3 your questions.

4 I'll give you a background on the Hanford  
5 cleanup approach. I'll try and keep that brief but  
6 I don't know the audience and the experience of the  
7 audience. So I do want to kind of neckdown and kind  
8 of zero in on the ares that we're talking about and  
9 give you a brief overview of the sites so it gives  
10 you a reference point for that. And then we're going  
11 to talk specifically about the operable unit 200-CW-  
12 5, and the three other operable units 200-PW-1, 3  
13 and 6. And lastly, we'll talk, again, about how you  
14 can provide input.

15 So before we do that, we have a document  
16 and it's available on DVD. It's kind of an  
17 overarching guideline, strategy document that we use  
18 called the Hanford Site Cleanup Completion  
19 Framework. This is a document that guides us. It's  
20 not a law. It's not an order but it guides us into  
21 how we're going to execute our cleanup. It's  
22 available to you. It's a public document. We  
23 actually went out on public comment for this two  
24 years ago and this is the final document that we  
25 have. It's a living, breathing, document, so please



1 feel free to comment on this if you get a chance and  
2 if you've had a chance to read it. And it does  
3 exactly what you see here. Tells you what our goals  
4 are for cleanup. Tells you what the relationships  
5 are between the different areas that we organize  
6 within the government. So you understand how we're  
7 trying to achieve our goals here. And then it talks  
8 about the challenges that we face there. It will  
9 give you an excellent frame work for what we talk  
10 about every time we come out for these decisions for  
11 public comment.

12           So looking at Hanford's cleanup area,  
13 Columbia River, coming through Richland, Tri-Cities  
14 down in this area. You see these four -- this  
15 graphic shows four general areas. The whole total  
16 area of the site is 586 square miles. And the green  
17 area that you see is the Hanford Reach National  
18 Monument area. It also includes an area of land  
19 that's an Ecology Reserve, Air Ecology Reserve,  
20 right here, which is basically Rattlesnake Mountain  
21 if you ever drive up there. That area is actually  
22 going to be -- the footprint is going to shrink on  
23 that this year. We're going to close out those  
24 areas, cleanup is complete. That's the good news.  
25 The other news about that area is that it's not as

1 complex a cleanup area. There wasn't a lot of waste  
2 dumped in these areas. This is a lot of, kind of  
3 garbage-type things that we cleaned up. So it was a  
4 simpler area to cleanup. But the footprint is  
5 shrinking. We are getting smaller on the plain in  
6 Central Plateau in the River Corridor.

7           The next area is the River Corridor which  
8 is depicted here in yellow. That is the focus of  
9 our efforts over the next five years we think we'll  
10 get to close-out by 2015 of this area. So we'll  
11 shrink that footprint down. We have mothballed the  
12 reactors. We've mothballed them because they have  
13 cesium in them and other radionuclides that we want  
14 to take more time to clean out. But they are  
15 mothballed, they're stabilized, they are not leaking  
16 anything into the river anymore. And in about 70  
17 years, we'll go back and clean those up. But the  
18 rest of that footprint will be clean and we're  
19 trying and we're going to achieve drinking water  
20 standards in that yellow area. Drinking standards  
21 in the yellow area. Okay.

22           So next area we'll talk about is this  
23 brown area and that's called the Central Plateau.  
24 And I manage the Central Plateau. It's the heart of  
25 all the activity that happened, all the nasty stuff

1 that happened in Hanford to produce these weapons.  
2 And -- or this weapon-grade material and that is the  
3 most complex part of this cleanup. And within that,  
4 you have two areas. An outer area which is the  
5 light brown and an inner area which is the darker  
6 brown. That's an important concept because in the  
7 outer area of Central Plateau, we're going to try  
8 and achieve the same drinking standard as the River  
9 Corridor. We're going to try and achieve drinking  
10 water standards in the Central Plateau outer area.  
11 In the inner area, we'll try to achieve the same  
12 thing. However, if we can't, at all costs, we're  
13 going to prevent plumes of radionuclides from  
14 getting to ground water and getting to the river, at  
15 all costs. So that's the general strategy. Another  
16 thing to note about this inner area that we'll talk  
17 about more is that it's different. Not to get too  
18 confusing, but we call it an industrial area. We  
19 call it an inner area. It's going to have a  
20 different land use than the other areas that we're  
21 talking about.

22           The government, the Department of Energy  
23 is going to have continuous presence there to  
24 protect human health and the environment. That  
25 means that we're going to be there monitoring the

1 sites and you'll see how dense it is with sites and  
2 why it's shaped like that in a second. We have a  
3 long-term commitment for custodianship of that site  
4 to protect you and the public and human health and  
5 the environment.

6 **AUDIENCE MEMBER:** 4,000 years you're going  
7 to do that?

8 **MR. DOWELL:** We're going to be there as  
9 long as it takes. We're going to be there as long  
10 as we need to to protect human health and the  
11 environment. That's the best I can say. You know,  
12 we got into a discussion last night and we've been,  
13 you know, amongst ourselves, we're sitting there  
14 going, "10,000 years, 4,000 thousand years?" The  
15 government hasn't existed, you know, for several  
16 hundred years, you know, a couple hundred years,  
17 plus. So, you know, when we talk about those, it  
18 kind of gets into a realm of a different science  
19 than the science we're talking here. So I can't say  
20 whether the government is going to be viable or  
21 anything like that. I don't want to make that  
22 comment. We're here to make sure that the human  
23 health and the environment is safe. We do that  
24 hand-in-hand with the EPA and that's all I can say.  
25 That area is going to be a long-term custodianship

1 for us at the Department of Energy. As you'll  
2 probably hear as we look at the Comprehensive Land  
3 Use Policy, the rest of these areas are being  
4 considered for a use by Fish and Wildlife, general  
5 recreation. There's no plans for building any  
6 residences along the Hanford Reach or anywhere in  
7 the Hanford area. It's going to be land use, but  
8 not Department of Energy use. Whereas, the inner  
9 area is ours, ours alone. You'll see why here in a  
10 second as we neckdown. I think we're going to have  
11 to keep questions until the end just so I can get  
12 through the brief. Do you mind? I hope not. I'm  
13 sorry.

14           So here's the Central Plateau. There's  
15 basically three areas of the Central Plateau that  
16 I've already discussed but I left out the  
17 groundwater one. Groundwater we treat and we do  
18 pump and treat systems throughout the whole area of  
19 Hanford. And we'll continue to do that until we  
20 sense that the cleanup is complete. And after --  
21 and we'll continue to monitor that. In fact, every  
22 year we publish a report that's the result of that.  
23 That is available for public review. We use that to  
24 monitor the effectiveness of our cleanup so that's  
25 the way we determine whether we have to go back and



1 remediate if we had to do so in the future.

2           Now, I want talk about the inner area, but  
3 a little bit more on the groundwater and I know it  
4 was kind of competing with Gerry's brief at the same  
5 time, but we had pictures up here showing some of  
6 the progress. And we're building one of the largest  
7 groundwater treatment facilities in the world right  
8 now. 2500 gallons per minute will be processed in  
9 the Central Plateau. And I'm commissioning that  
10 plant at the end of December. Very exciting, so  
11 we're making a lot of progress out there and we're  
12 trying to do the right thing in treating the water  
13 before it has any chance of getting to the river.

14           So when we look at the footprint, this is  
15 that inner area blown up. And you notice it's a  
16 very unique kind of footprint. It has a very odd  
17 shape and that shape is defined by these progression  
18 of decisions and recommendations that we've made  
19 through the year that's in your briefs that  
20 hopefully you picked up at the table. I'm not going  
21 to go into these in detail, but what it does show  
22 you is that there's multiple partners using it. It  
23 also shows you that there's multiple sites that we  
24 use for managing the waste and holding the waste for  
25 long term. So as you look at this area, you can see

1 it's not a nice geometric, you know, rectangle or  
2 anything like that. It's 10-square miles ultimately  
3 and it's locked solid with the waste sites that  
4 remain that we're going to have to have long-term  
5 custodianship of. Things like the tank farms.  
6 Things like the environmental remediation of  
7 disposal facility, ERDF, in the middle. Things like  
8 the nuclear reactor burial site up here, or the  
9 Department of Ecology in Washington, low-level  
10 radioactive waste disposal site here. That  
11 footprint is defined by the stuff that we're going  
12 to have to keep an eye on for a long time. And  
13 that's why it's shaped that way. So we try to  
14 minimize that footprint, very important concept.

15           And this kind of summarizes that. No. 1,  
16 is that we tried to minimize it down to -- and it's  
17 down to 10-square feet -- or 10-square miles. I wish  
18 it was feet. 10-square miles and, you know, that's  
19 a manageable area. That's something that we can  
20 manage long term. I think the resources are  
21 achievable for that and it's important for us to do  
22 that. We also or going to be making risk-based and  
23 cost-effective cleanup decisions in this area. It's  
24 going to have a different use. It's not going to  
25 be, you know, used for general recreation. It's not

1 going to be controlled by the Fish and Wildlife  
2 Department. It's going to have barriers assigned to  
3 it. You won't be able to access it as part of the  
4 public. It's just going to be a bunch of burial  
5 sites that have to be monitored and that's really  
6 what it's down to in that area. So it's not --  
7 there's no future for this area for residences or  
8 other uses that we see. At least not in this  
9 foreseeable future.

10           We're also going to make sure as long-term  
11 custodians, we protect human health and the  
12 environment. That's job one. That's what we're  
13 trying to achieve there. And over the time that we  
14 make these decisions, for instance, this is one  
15 decision on 22 areas out of about 800 areas we'll  
16 have to make decisions on over the future decade or  
17 so. And those kinds of decisions we have to make --  
18 get to these decisions but it doesn't stop there.  
19 Our commitment with the EPA is that we continue to  
20 monitor the effectiveness. In fact, it's law that  
21 we continue to monitor the effectiveness of these  
22 sites and make sure that they're doing what they are  
23 supposed to be doing. If we have indications that  
24 something is wrong, something's failing, we get  
25 samples that show that there's more remediation

1 necessary, we have to go back and remedy that. And  
2 the good news about that, if it is good news, that's  
3 probably not the way to characterize it, is that, if  
4 we notice what kind of technology we'll be able to  
5 leverage, 20, 30, 40 years from now, if that were to  
6 happen. And it doesn't happen very often because we  
7 try to make these decisions as fast as we can. And  
8 tonight, we feel that we have enough information to  
9 make this decision. So that's why we're here.

10           Lastly, before I turn it over to Emy, I'm  
11 just going to talk briefly about the CERCLA process  
12 so you can understand exactly where we are, wherein  
13 this process goes. So we started with the site  
14 inspection. We looked at records, all sorts of --  
15 we tried to, you know, as we looked at the areas,  
16 we're trying to gather information to see what kind  
17 of decision we're going to make, to see if it met a  
18 threshold to make a decision, then we determined  
19 that it needed to. So we went through our remedial  
20 investigation. That's where we dug deep into data.  
21 Looked at the history, the precedents, all the  
22 operational logs, everything that was done in this  
23 area. Some of this is very well documented; some of  
24 it is less well documented. And where it's less  
25 well documented, we sample and we try and balance

1 the sample needs with the documentation so that when  
2 we get enough information, we feel solid that we can  
3 come to the public with a decision and go for a  
4 decision on this and get on with the remediation.

5 And get on with the progress on the site.

6           After that, we go into a feasibility study  
7 which evaluates the risk and generates a set of  
8 alternatives. And we're here tonight to present  
9 those alternatives including a preferred alternative  
10 that we've identified for your comment. Now, we  
11 received comment on this two years ago is when we  
12 came out. And then we came back with a proposal  
13 plan and this is the official time when we actually  
14 come back out for comment. So here we are today  
15 looking for your comment for a preferred  
16 alternative. If you noticed, we listen to you, we  
17 actually changed significantly some of the  
18 remediation of these sites with the input that we  
19 received earlier. So that's why it's important and  
20 it's really exciting to see how many people are here  
21 tonight because I really like that. It really helps  
22 me out. So we get to the record of decision. That's  
23 when we, basically, when we analyze the public  
24 comment at the Tri-Parties, the three parties of the  
25 State of Washington Ecology, the EPA, and the



1 Department of Energy get together, review the  
2 decision, changes as necessary, that turns into  
3 remedial action which means that we actually execute  
4 that plan through a design plan that goes through  
5 the actual implementation and then we get into the  
6 review process which by CERCLA had a five year  
7 reevaluation of the effectiveness and review. On  
8 the Hanford site, we review that annually, the whole  
9 site annually on the basis of the sampling that we  
10 do on an annual basis. And of course, in actual  
11 operations right now, and active remediation, a lot  
12 of activity sampling comes with remediation as we  
13 pull up ground sites and remediate the water, pump  
14 and treat and do our monitoring.

15           One thing to note, and I'll leave on this  
16 is that in the CERCLA process, we have threshold  
17 criteria which takes us to a decision it has to meet  
18 a specific criteria whether it needs remediation and  
19 then we go into balancing criteria which basically  
20 looks at effectiveness long term, short term, the  
21 reduction of toxicity, or mobility, and the volume  
22 of treatment. Those are all elements of what we're  
23 going to talk about tonight. We look at the  
24 implementability, whether we can do it or not,  
25 whether, you know, engineering wise it's

1 feasibility, the technology and readiness level of  
2 that technology and then we look at the cost and we  
3 balance all five of those things. A lot of people  
4 say that we drive everything by cost. I don't do  
5 that. I don't think that's a wise thing to do  
6 because these decisions have to be made long term  
7 for generations to follow.

8           So on that note, I'm going to turn it over  
9 to Emy. She's going to give you some background on  
10 the areas we're talking about tonight.

11           **MS. LAIJA:** Can you hear me okay? No?  
12 How's that? Better. Okay. Well, my name is  
13 Emerald Laija. I work with the Environmental  
14 Protection Agency. I am the EPA's project manager  
15 for a number of the waste sites we are going to be  
16 talking about tonight. What I wanted to do is just  
17 provide some background information on how these  
18 waste sites came to be.

19           So, J.D. talked about how the Hanford site  
20 is broken up. We're looking at waste areas. The  
21 inner area is divided in half. We have the 200 West  
22 area on the left-hand side and then the 200 East  
23 area on the right-hand side. So the waste sites in  
24 the 200 West area, they primarily have plutonium  
25 contamination and separated from those on the East,

1 200 East area, we have the cesium contamination  
2 sites.

3           So let's take a closer look at what's  
4 going on in the inner area. There are a lot of  
5 sites out there. There are hundreds of waste sites.  
6 So when we are looking at remediating them, we break  
7 them up into small units group them accordingly to  
8 make it more manageable. So in looking at -- sorry.  
9 I know you really can't read what's up there, but if  
10 you look at the different colors to give you an idea  
11 of some of the separation that we've done. The  
12 sites we are looking at tonight are dealing with  
13 soil contamination. As J.D. mentioned, our  
14 groundwater is also contaminated at Hanford but we  
15 do have activities in place to address that  
16 contamination. So we're just looking at soil  
17 contamination for these waste sites.

18           So just how do these waste sites come to  
19 be? This graph here, is a simplified representation  
20 of how it happened. In the central part of Hanford  
21 we had huge processing facilities and that's where  
22 we processed our plutonium that we were making  
23 during the Cold War. And during those activities,  
24 we generated thousands of gallons of liquid waste.  
25 At the time, the way to dispose of that waste was to

1 discharge it to the ground. So it was discharged  
2 into the cribs or trenches directly. So when we're  
3 looking at these waste sites, I know we already  
4 mentioned the names don't make a lot of sense, 200-  
5 PW-1, 3, and 6, means nothing to anyone. So when we  
6 were looking at these waste sites, we said, "Okay.  
7 Well, how are they similar?" We looked at the  
8 historical knowledge that we had. Process knowledge  
9 and the data collected during sampling, and grouped  
10 these into smaller waste groups that made more  
11 sense. If the waste sites are similar, ideally the  
12 cleanup approach you use could be implemented across  
13 all the sites in that waste group.

14           So we have the Z-Ditches and the Low-Salt  
15 sites. These waste sites received liquid waste that  
16 was contaminated with plutonium and americium. For  
17 the most part, this waste didn't travel too deep  
18 into it ground. And the Z-Ditches it goes down to a  
19 depth of about 15 feet below ground surface and  
20 then in the Low-Salt sites, it went down to about 25  
21 feet. So relatively shallow. Then we have the High-  
22 Salt sites and these sites are of particular  
23 interest to a lot of people here. These sites are  
24 different. There's three of them total, but the  
25 liquid waste that was discharged here was highly

1 acidic. It had carbon tetrachloride and nitric acid  
2 and that just allowed the contamination to travel  
3 deep, low into the soil column all the way to  
4 groundwater. That's what makes these waste sites so  
5 unique, the fact that the plutonium was able to  
6 travel down to the carbon tetrachloride to these  
7 depths. It goes down to about 100 to 110 feet.  
8 That's why it was able it reach groundwater.

9           As far as the carbon tetrachloride goes,  
10 that is a nasty substance. So we actually  
11 implemented a soil vapor extraction system in the  
12 early 1990s to address that contamination. Something  
13 we couldn't wait until other decisions were in  
14 place. We had to act on that faster because of the  
15 risk that it posed. So we are running our soil  
16 vapor extraction system and that system will  
17 continue to run no matter what decision we end up  
18 making for the other wastes sites. That has to  
19 continue running to address that carbon  
20 tetrachloride contamination. So that will continue  
21 on into the future.

22           The next waste group is the cesium-137  
23 waste group. Those were the ones that were located  
24 separately in the 200 East area. Again, here, the  
25 waste is fairly, shallow, traveled down to a depth



1 of 28 feet or so for those sites. We also have two  
2 tanks that were used to collect solids from the  
3 liquid waste. Think of it as an old septic system.  
4 You flush the toilet, the solids go into a tank,  
5 dirty water is then disbursed into the ground  
6 usually over a gravel, excuse me, a bed of gravel.  
7 So that distributes the water and allows it to  
8 percolate down. That is a very, very simple way of  
9 describing what happened here, but it's generally  
10 the same idea.

11 So I'll go ahead and hand it over to J.D.  
12 so he can talk about the alternatives.

13 **MR. NILES:** You've got about six minutes  
14 left.

15 **MR. DOWELL:** Okay. Good. So we went down  
16 these areas. There's six areas we're going to talk  
17 about. 200-CW-5 we're going to talk about is one of  
18 the six. And Emy already talked a lot about the  
19 ditches and there's a good depiction of this on the  
20 first screen on your left there in front. The next  
21 one after it also shows the exact ditches and what  
22 they look like so if you get a chance and you're  
23 curious about these things, we put the ones that are  
24 kind of most interesting up here and you can take a  
25 look at those after the brief or during it if you

1 want to walk over there.

2           Three shallow open ditches, known as Z-  
3 Ditches. 4200 feet is the longest one and they are  
4 -- if you look at this picture right here, there's  
5 actually four ditches in this picture but you don't  
6 see a ditch anymore. They've all been filled in for  
7 a long time. That's typical of what a waste site  
8 looks like here. They receive cooling water and  
9 steam condensate from the plutonium finishing plant.  
10 And that plant was a single pass plant but it  
11 actually -- it wasn't designed to dispose of this  
12 material. This was not like dumped. It was actually  
13 like leaks in the condensate piping that resulted in  
14 some of the material being released. So it's kind  
15 of an interesting anomaly, but they clearly didn't  
16 catch it in time because there's a significant  
17 amount of material in the ground. Contamination's  
18 located primarily at and below the bottom of the  
19 trenches. The trenches go down. They are fairly  
20 shallow and you'll see our remediation is going to  
21 take care of that pretty well. Primarily risk  
22 drivers are americium, plutonium, cesium and radium.  
23           So when we look at the alternatives, we  
24 are required by CERCLA to look at no action. So  
25 that's just a requirement by law. If you're

1 curious, we're trying to do a fast one or something  
2 like that, we actually have to look at that. It's a  
3 benchmark to see what the effect would be if we did  
4 nothing. The next one is maintaining existing soil  
5 cover and providing institutional controls such as  
6 controlling access or putting limitations on how the  
7 land will be that's another option. Another one is  
8 remove, treat as needed, and dispose, which is RTD.  
9 It's a common acronym that we use for remediation.  
10 And then engineered surface barriers can be any  
11 types of barriers, but they're basically engineered  
12 to evaporate water and not allow it to penetrate the  
13 ground and drive these contaminants further or  
14 deeper into the soil or to the groundwater.

15           You'll hear one called an  
16 evapotranspiration barrier. And basically, what  
17 that's designed to do is not let water get down  
18 below into the areas where the contaminants are so  
19 they can't go any further and have any more mobility  
20 or any mechanism to provide mobility.

21           In-situ vitrification is a fancy term for  
22 glass, glassification. So what happens here is we  
23 put electrodes across, basically, catty-corner from  
24 each other, basically four electrodes. And it can  
25 be more if you have a larger field and put a charge

1 in there and it basically classifies the soil in  
2 place to hold that material there. That's another  
3 example. Typically, those fields are limited to  
4 about 30 to 40 feet. And lastly, we can do a  
5 combination of alternatives. So for the CW-200-5  
6 area, we are performing alternatives to remove,  
7 treat, dispose of that material down to 15 feet and  
8 dispose as required. When I say dispose as  
9 required, it's either going to go off site if it's  
10 low activity waste, it goes into WIPP, the Waste  
11 Isolation Pilot Plant down in New Mexico where we  
12 sent TRU waste.

13           The next five will be discussed over the  
14 next four slides. So this is 200-PW-1, 3, and 6.  
15 As Emy talked about, PW-1 and 6 are on the left side  
16 of the 200 West area of the Central Plateau area.  
17 And CW-3 is on the right-hand side and you can see  
18 how these are organized here. 1600 ground  
19 engineered liquid waste disposal sites. So these  
20 were engineered sites that were designed to dispose  
21 of waste efficiently. Not like the trenches in 200-  
22 CW-5. These are fully designed to get it deeper  
23 into the ground. It's important to understand the  
24 organization because that's how we'll talk about the  
25 preferred alternatives. High-Salt, Low-Salt,

1 Settling tank which is a geometry and then cesium  
2 which is a radionuclide, is conserved, lastly, other  
3 sites. And this will make sense as I go through the  
4 alternatives.

5           It's basically, during the Hanford site  
6 operations, primarily, from the plutonium finishing  
7 plant and also from the Purex treatment plant. These  
8 are just dump sites from those operations. Risk  
9 drivers, plutonium, americium, and carbon  
10 tetrachloride. And lastly, the PW-3 site is  
11 primarily driven by cesium-137, and again, we'll  
12 talk about that in a second.

13           So going over the possibility of  
14 alternatives, the only difference is that on  
15 maintaining the existing soil cover, we can maintain  
16 or enhance the existing soil cover on this one. And  
17 then we talked about engineering surface barriers as  
18 we in-situ vitrification, remove, treat, dispose,  
19 and then the soil vapor extraction is a mechanism by  
20 which we put a vacuum on the ground and we basically  
21 are extracting carbon tetrachloride in a vapor form  
22 so we can condense it and remove the solid material  
23 as we pull it out of the ground. It's a technique  
24 that's effective for recovering carbon  
25 tetrachloride.

1           **AUDIENCE MEMBER:** How deep?

2           **MR. DOWELL:** How deep will it go?

3           **AUDIENCE MEMBER:** Right.

4           **MR. DOWELL:** Well, it depends on where we  
5 actually apply that vacuum. So we can get it as  
6 deep as we want depending on where we plot the  
7 vacuum.

8           **DENNIS-EPA:** Plutonium, J.D., it's around  
9 100 feet and then we have some down as deep as 240  
10 feet.

11           **MR. DOWELL:** Right. So the I full --  
12 that's basically the full spectrum of the soil  
13 column. Okay. So going in the High-Salt waste  
14 group, we chose a combination of alternatives. And  
15 those alternatives include continuing to use the  
16 soil vapor extraction system, to evacuate -- or  
17 excavate, rather, the highest concentrations or two  
18 feet of the contaminated soil. I won't say highest  
19 concentrations. I'll say two feet of the soil is  
20 contaminated, remove and dispose of the associated  
21 structure. And then backfill the area with clean-  
22 fill and then construct an evapotranspiration  
23 barrier on top of that.

24           For the preferred all three -- for the  
25 Low-Salt waste group in PW-1 and 6. We're going to

1 remove sufficient portion which is basically,  
2 remove, treat, dispose of the material to depth  
3 necessary to remediate and then apply an  
4 evapotranspiration barrier on top of that as well.

5 In 200-PW-3, which is the cesium-137 waste  
6 group, this material ranges in depth between about  
7 10 to 12 feet down to about 20 feet and we're going  
8 to maintain and enhance our existing soil cover and  
9 to ensure that the waste site limited to 15 feet to  
10 prevent any workers from coming in and excavating  
11 that material. And then that's all we're going to  
12 do with that.

13 And then lastly, these two are our  
14 Settling tank waste group which a couple of these  
15 are settling tanks. They are basically large  
16 concrete structures, basins that are holding a  
17 sludge-like material and liquid. We are going to  
18 remove the sludge and liquid containing both  
19 plutonium and americium, remediate that, RTD that.  
20 And then we're going to grout the remaining tank in  
21 place, not removing the tank. And lastly, the 200-  
22 PW-6 other site waste group, this is a no-action  
23 waste group because we have no indications that  
24 there's material left in significant concentration  
25 or quantities to require remediation.

1           So how can you provide input? Tonight,  
2 your presence, you'll be making comments. We've got  
3 a recorder for that. We'll take those comments  
4 here. We'll take them on paper tonight. You can  
5 send us comments by email. We'll consider all these  
6 comments with our Tri-party Agreement partners and  
7 then after that, we'll issue a record of decision  
8 and we are expecting to that record of decision by  
9 September. Although we are talking about extending  
10 public comment period. That's all I have.

11           **MR. NILES:** Okay. Share the mic back with  
12 Emy.

13           **AUDIENCE MEMBER:** Will there be a response  
14 summary matrix to all public comment before the  
15 issuance of the record of decision?

16           **MS. LAIJA:** The response summary actually  
17 comes out as part of the record of decision. So  
18 there will not be a document that comes out before  
19 for that with formal responses. I'll just be a  
20 minute with this part and then we'll get to your  
21 questions, if that's okay.

22           So a second ago I was speaking and giving  
23 you some educational information on the sites. I'd  
24 like to take just a minute to let you know where EPA  
25 stands as far as the preferred alternatives that



1 were identified tonight. EPA mission is to look at  
2 the protection of human health and the environment.  
3 We've looked at these alternatives and have  
4 determined that, yes, they are protective. However,  
5 one of the criteria we do look at when we're trying  
6 to decide on a decision is the public input. That's  
7 one of the criteria that's listed on this display  
8 over here. So being here, providing your comments,  
9 saying what you like or don't like or how you think  
10 we should change the preferred alternative is very  
11 important. It has direct impact on the decisions  
12 we're going to make. EPA's particularly interested  
13 in hearing your input on the cesium sites where we  
14 proposed bringing in backfill to maintain a 15 foot  
15 depth of cover over those waste sites. This is a  
16 new approach for EPA, so we are very interested in  
17 hearing what you have to say about that. And of  
18 course, the High-Salt sites which are that go so  
19 deep, we're interested in hearing what you think  
20 about that as well. Thank you.

21 **MR. NILES:** Thank you, Emy. We'll get the  
22 test on this microphone here before I blast you.

23 So I'm going to step away from the  
24 moderator role for just about two minutes and  
25 provide you with an overview of Oregon's comments

1 and then we're going to hear from Dan Serres from  
2 Columbia Riverkeeper and then we'll go into the Q &  
3 A.

4           Outside the room is a copy of our letter  
5 we submitted to the Tri-Parties. In my opening  
6 remarks, I mentioned six waste groups and four of  
7 them, the first four I said we're fine with that,  
8 and we are. And I do want to acknowledge the change  
9 that the Tri-Parties made from a few years ago when  
10 they were proposing basically leaving all of this  
11 material in the ground. And now they have moved  
12 quite a bit on most of those sites. The concern we  
13 have is those two other waste groups that I  
14 highlighted. The cesium waste sites and the High-  
15 Salt plutonium waste site. We have had -- the  
16 State of Oregon and the Department Energy, U.S.  
17 Department of Energy have had a long running  
18 disagreement, if you will, about the mobility of  
19 plutonium. In our view, the soil chemistry in  
20 Hanford can result in to some mobility of plutonium.

21           And so we have concerns about leaving  
22 large amounts of plutonium in those three waste  
23 sites. And what we were proposing is what's called  
24 an observation approach where it is you begin to  
25 excavate, you're also sampling, you're seeing what's

1 there. If two feet gets, you know, the bulk of that  
2 concentrations drop, then two feet is great. Our  
3 assumption is it's probably going to have to take  
4 them deeper than two feet. And if it's three feet  
5 or five feet or 20 feet, we would like to see  
6 sampling going and using that observational approach  
7 and removing the bulk of that plutonium.

8           On the cesium waste sites, I think, I'm  
9 probably going to surprise a lot of you because we  
10 are saying that we believe that this might be a  
11 satisfactory resolution to the cesium sites. And it  
12 goes with the same argument I just gave in that the  
13 soil chemistry and interaction with various  
14 contaminants, with cesium we do believe it is  
15 immobile in soil, that it doesn't move and does not  
16 present a threat to groundwater. And given its  
17 much, much shorter half-life of about 30 years, our  
18 caveat was if the U.S. Department of Energy can  
19 maintain control of the site at the surface, and  
20 keep use of fertilizers and things like that off the  
21 surface which could remobilize the cesium we would  
22 be willing to accept this as a proposal. So that's  
23 kind of a summary of our comments from Oregon.  
24 Again, there's copies of our letter just outside and  
25 around the corner there, which I hope you'll take.

1 So back to the moderator role. Our last  
2 speaker before we get to our question and answer, is  
3 going to provide a local alternative perspective.

4 He's Dan Serres with Columbia Riverkeeper

5 **MR. SERRES:** My name is Dan Serres. I'm  
6 the conservation director with Columbia Riverkeeper.  
7 I know I'm joined by a number of members of the  
8 Hanford Advisory Board here, as well. I want to  
9 point out a couple procedural things before I really  
10 get started which is first, there are fact sheets  
11 that are going, our lovely assistant Chuck, and  
12 Scott. He's got fact sheets if people want to know  
13 more about the proposal from our perspective and  
14 also how to comment online or in writing. The  
15 second thing is both Heart of America Northwest and  
16 Riverkeeper have sign-in sheets going around. If  
17 you heard about this meeting from us or if you heard  
18 about it somewhere else, it's a good way to stay  
19 connected with us and then you hear about future  
20 meetings as they come up.

21 Two other things I want to point out.  
22 There are a couple definitions that I want to  
23 provide for people that came up in the presentation.  
24 One that's a really important one is TRU waste. What  
25 does TRU waste mean? That's really when we're

1 talking about plutonium. It's something that is --  
2 it's a long half-life and it's present in  
3 concentration of 100 nanocuries per gram or greater.  
4 So it's a high concentration of really long-lived,  
5 really radioactive stuff. TRU waste, transuranic  
6 waste, is stuff that has to go off of the Hanford  
7 site. One of the big debates that we have about  
8 this proposal is the idea to leave plutonium waste  
9 in the ground, first of all. And then second,  
10 whether those concentrations should be regarded as  
11 transuranic waste and leave the Hanford site.

12 To be blunt, Riverkeeper disagrees with  
13 the conclusions of the U.S. Department of Energy  
14 about the handling of plutonium waste and these  
15 waste sites. Our position is not controversial. Our  
16 position is joined by consensus advice by the  
17 Hanford advisory board which is a broad based  
18 Advisory Board that to quote the Hanford Advisory  
19 Board said, "Plutonium is forever." That's the  
20 perspective that we bring to this debate. We're  
21 very concerned that the idea -- at the idea of  
22 leaving large amounts of plutonium in the soil. The  
23 Hanford Advisory Board also advised that the cesium  
24 waste sites are well-suited to removal, treat and  
25 dispose alternative. That is some of this waste

1 isn't that deep. So by digging it up, it wouldn't  
2 really be all that expensive. You can move it into  
3 a place that is much more stable.

4           The frame of protectiveness rests on a few  
5 key assumptions that have been laid out already. The  
6 first one being plutonium will not move. Oregon  
7 Department Energy has already stated they don't  
8 agree with that. I don't agree with that. I think  
9 it's important to remember 24,000 years is a long  
10 time and that's one-half life. The rule of thumb  
11 for radioactive waste is 10 half-lives. We're  
12 talking 240,000 years that this waste will be left  
13 in the soil and could remain dangerous. From our  
14 perspective, that's a very difficult assumption to  
15 accept. You also have to assume that the caps will  
16 remain effective over a very long period of time.  
17 Evapotranspiration barriers it has some success in  
18 some places, some not so successful in others. Some  
19 have failed. It's very -- it's a huge concern for  
20 us that these barriers will be used over plutonium  
21 sites that will, again, be there for tens of  
22 thousands of years. It's not a viable assumption to  
23 us that this contamination won't be mobilized in the  
24 future by whatever climate exists, let's say in 15  
25 or 100,000 years.

1 Another key assumption is that the site  
2 will be under control for ten of thousands of years.  
3 That's very, very difficult assumption to make this  
4 week as we approach budget meltdown. The idea of  
5 continuous presence is one that I think is -- I  
6 believe it when the Department of Energy says they  
7 want to control the site and they don't want people  
8 in this Central Plateau. I just don't believe that  
9 it's possible for tens of thousands of years. That's  
10 where I think a lot of us will diverge from the key  
11 assumption.

12 To put this in perspective, again, we take  
13 a geological view of the Columbia river and the  
14 threat that this waste poses to the Columbia. 13 or  
15 14,000 years ago, Missoula floods were breaking  
16 through and sweeping down the Columbia basin shaping  
17 landscape in Eastern Washington in Hanford. They  
18 find fossils of bison, mastodon, camels out there,  
19 spread out through Eastern Washington including the  
20 White Bluffs right at Hanford. If you ever get a  
21 chance to paddle down the Columbia River, it's an  
22 incredible geological experience if you're looking  
23 at strata laid down by one massive flood after  
24 another. So it's very difficult to assume that the  
25 Columbia River will behave the way its behaving now

1 and that the climate will look the same tens of  
2 thousands of years from now. We just think that  
3 that assumption alone invalidates the conclusion of  
4 this plan.

5           So what's the real justification for going  
6 only two feet down? The justification is that it's  
7 cheaper. That's really, you know, if you look at  
8 the alternatives, the way they're laid out, they've  
9 got one that goes two feet and the next one is 18  
10 feet. And the difference in the cost is an  
11 estimated 550,000 million dollars. So that's a lot  
12 of money but what does ten feet get you? What does  
13 twelve feet get you? We don't see that in this  
14 analysis and that's one of the big gaps and it's one  
15 of the reasons why DOE needs to go back to the  
16 drawing board. At the extended site hearings, many  
17 of you were there. We heard a commitment from the  
18 Department of Energy, Matt McCormick, who stood up  
19 repeatedly and said, "Look, cleanup is not  
20 discretionary." We agree with that principle.  
21 That's the right idea. That's the right attitude.  
22 We applaud that. We think, though, that thorough,  
23 protected cleanup is not discretionary. And that we  
24 don't think that this plan meets that standard.

25           So the sort of one thing in terms of your



1 comments, think about the alternatives, think about  
2 the assumptions and comment on those things directly  
3 because I think those are the things that a lot of  
4 people should be weighing in on. To get just -- to  
5 bring it back to the cesium just really quickly.  
6 Again, one of the issues with the cesium sites is  
7 that they can be dug up and moved to a landfill  
8 onsite, called the environmental restoration  
9 disposal facility. ERDF. Sounds like you're getting  
10 punched in the stomach. ERDF. But its' actually a  
11 very useful place in the Hanford site that can be  
12 used to take the stuff out of the relatively shallow  
13 soil and move it into a place that's more protected.

14           So to sum it all up, you guys heard from  
15 Gerry before. You heard from the agencies. You  
16 heard from me. Hanford Advisory Board has weighed  
17 in. There's a refrain that's happening again and  
18 again. Clean it up. Get the plutonium out of soil  
19 as much as you can. I think it's a pretty simple,  
20 straightforward message. We made it before. We'll  
21 make it again if we have to. So thank you all, very  
22 much for being here.

23           **MR. NILES:** All right. So we'd like to --  
24 we've had a couple questions that came up during the  
25 presentations. That's what we'd like to do now is

1 clarifying things that you're not understanding,  
2 answer some questions before we get into the formal  
3 comment period. It's a tight room. We want people  
4 to able to hear what your question is, but I guess  
5 what I'm going to say is if you know you have a  
6 booming voice and you're in the back then maybe we  
7 can get by without a microphone for you. But if you  
8 don't speak well, in terms of loud, we'll take the  
9 time to get the microphone to you.

10 Can I have a quick show of hands of the  
11 people that have some clarifying questions, so we  
12 can know where to start. There's somebody right in  
13 front of you with the microphone.

14 **AUDIENCE MEMBER:** I'm just trying to  
15 figure out where Hanford is regarding importing,  
16 exporting or maintaining the waste, the  
17 radioactive nuclides that you have. So is Hanford  
18 in the position of bringing in any materials and  
19 what percentage are you looking at exporting or  
20 where would you export it to and why is that a place  
21 to keep and it where it is now?

22 **MR. DOWELL:** Are you talking the greater  
23 than Class C?

24 **AUDIENCE MEMBER:** I'm just saying, is  
25 waste coming into Hanford at this point?

1           **MR. DOWELL:** No. There's no waste coming  
2 into Hanford at this point.

3           **AUDIENCE MEMBER:** I come here every couple  
4 of years and get updates. So I'm just --

5           **MR. DOWELL:** Good questions.

6           **AUDIENCE MEMBER:** How much of the material  
7 that you are expecting or anticipating to vitrify?

8           **MR. DOWELL:** Well, that's another good  
9 question. There's -- for tonight's decision it's a  
10 little bit different. Realize that there's two  
11 organizations with the Department of Energy. There's  
12 Richland and Office of River Protection. And the  
13 vitrification plant is going to be used primarily to  
14 mitigate the 53 million gallons of tank waste that  
15 exists on Central Plateau. And then the remediation  
16 of those tanks is subject to the environmental  
17 impact statement that's underway right now and we  
18 expect to have that at the end of the year and then  
19 there's a decision process going on as we speak, as  
20 we negotiate, how that is going to be managed. So  
21 the tanks, even though it's not related to this, an  
22 update is that all that waste is going -- is  
23 planning on being vitrified. An estimate for how  
24 much of that is TRU and being shipped out, it's a  
25 cannister count.

1 When you look at the cannisters that come  
2 out of the vitrification facility at the waste  
3 treatment plant, the high level waste cannisters, I  
4 recall, are about 10 feet tall and two and a half  
5 feet wide, and there's going to be about -- last I  
6 heard the count was about 12,000 of those are TRU  
7 waste that are going to be shipped out. That's for  
8 waste in the tanks and those are rough numbers.

9 **MR. NILES:** J.D., clarify. You were  
10 calling those TRU waste.

11 **MR. DOWELL:** Not TRU. You're right. High-  
12 level waste. I'm sorry. It's high-level waste, not  
13 TRU waste. Don't let me get you confused. Now, my  
14 group actually reclaims TRU waste that we've got in  
15 storage right now. So I have a program today, that  
16 is reclaiming TRU waste that we knew where we were  
17 going and we stored it, temporarily, according to  
18 law, and now we're in the process of retrieving that  
19 and sending that to WIPP. I've got the numbers  
20 available but they're in meters cubed and they're in  
21 the thousands of meters cubed.

22 So we have active shipments going down to  
23 WIPP as often as we can. Subject to things like  
24 fires and access to the roads, it's a very complex  
25 process so get the waste shipped and it's on a

1 rotational basis with the State of New Mexico. They  
2 have teams that come in that are certified teams  
3 that come out and do that. But the bottom line is  
4 that we are actively shipping TRU. We are not  
5 actively making glass yet and high level waste  
6 glass will be all be shipped to a repository to be  
7 determined. And of course, you can see is news as  
8 well as I, what's going on with that.

9 **GERRY POLLET:** I think if you can clarify.  
10 I don't want to leave the impression that no waste  
11 is proposed to come to Hanford. That would be very  
12 misleading. There is waste coming in right now. You  
13 take waste from the Navy and the proposal is to add  
14 12,000 truckloads of radioactive, extremely  
15 radioactive waste to be buried in a landfill or bore  
16 holes right near where we're talking about in the  
17 Central Plateau, that's that -- you called it  
18 greater than Class C?

19 **MR. DOWELL:** Grater than Class C.

20 **GERRY POLLET:** And another volume that is  
21 many times greater than that of low-level chemical  
22 and extremely radioactive waste to go into the  
23 existing landfill that's right next door to that.  
24 And the modeling for that landfill shows, "Hey,  
25 guess what?" It will contaminate groundwater,

1 seriously. So you shouldn't lead people --

2 **MR. DOWELL:** Yeah. I'll stand corrected  
3 on the fact that we do take Naval reactors. They  
4 are very stable. They're low-level waste. You can  
5 walk up and touch those. The greater than Class C  
6 decision is in process, so that decision has not  
7 been made yet. Washington is on the short list of  
8 names and that went out for public comment, as well  
9 recently. That public comment period is closed. I  
10 don't have a status on that decision.

11 **AUDIENCE MEMBER:** Three related questions.  
12 Will the WIPP facility fill up before all the  
13 trenches can be remedied, so are we going to lose  
14 our capacity for stuff that's dug up; why isn't the  
15 State of Washington pursuing a higher standard of  
16 cleanup like Oregon is relative to what's left  
17 behind; and how come the projection maps of the  
18 movement projected at the groundwater? Why do they  
19 stop at the riverbank and not show offsite  
20 migration?

21 **MR. DOWELL:** Okay. The three questions  
22 there, I'll take the first and last. The first  
23 question you asked -- you want to go first John?

24 **MR. PRICE:** Sure. Yeah, hi. My name is  
25 John Price. I'm with the State of Washington

1 Department of Ecology and I'll answer your question  
2 about why the State of Washington is not pursuing a  
3 higher degree of cleanup like Oregon is. I just  
4 want to explain our role real briefly. There's a  
5 lot of different problems to the Hanford site and  
6 Central Hanford that J.D. talked about 800  
7 individual waste locations. For Hanford as a whole,  
8 there's about a total of 3,000. So there's so many  
9 of these we split up responsibility for reviewing  
10 the Department of Energy's work between U.S. EPA,  
11 that's who Emy's with, and then the State of  
12 Washington Department of Ecology. So in terms of  
13 your questions, I believe Department of Ecology does  
14 favor a higher degree of cleanup like Oregon does.  
15 We're generally in agreement with Oregon. I think  
16 they do really good work and good technical  
17 analysis. And I think the comments that Ken read to  
18 you are pretty consistent with what Washington said  
19 last year. Last year in July, we sent a letter  
20 about this proposal the U.S. EPA National Remedy  
21 Review Board. That's not Emy, but that's the  
22 National EPA. And one of the things we said in  
23 there was based on a relatively high degree of  
24 uncertainty, Ecology requests a bias towards a more  
25 robust remedy. So basically, we were saying, if you

1 can do more, please do more. So I think that's  
2 pretty consistent with Oregon's comments.

3 **MR. NILES:** All right. So two questions  
4 for you J.D.

5 **MR. DOWELL:** Your first question was on  
6 the capacity. WIPP has a capacity as mandated by  
7 Congress. Right now that capacity it's set to be  
8 foreclosure date of 2039. And they are in the  
9 process of extending that. Based on the extension  
10 closure date, it should meet the current estimates  
11 Hanford, those needs, through 2050. And I've got  
12 numbers here but they are a lot of numbers. I could  
13 show it to you afterwards if that's all right.

14 **AUDIENCE MEMBER:** Are those estimates  
15 based on the more shallow soil level of only two  
16 feet or can they be extended to accommodate more  
17 deeper depth removal?

18 **MR. DOWELL:** They can be expanded to  
19 accommodate deeper depth removal.

20 **AUDIENCE MEMBER:** How far, do you know?

21 **MR. DOWELL:** No, I don't know the exact  
22 number. I mean, if you pulled all the plutonium out  
23 of the site, the mass balance going to WIPP, I could  
24 probably do the numbers quickly, but I haven't done  
25 that. But WIPP'S capacity, it's a pretty



1 incredible site if you ever seen studies on it and  
2 understand the salt mine processing. It's got  
3 significant large capacity. There's other sites  
4 similar to that geology in that region Texas and  
5 other areas. In fact, those are being looked at as  
6 long-term repositories. So the options for PW-1, 3  
7 and 6 are adequate for our needs.

8 What was your third question?

9 **AUDIENCE MEMBER:** How come the groundwater  
10 modeling projection map stop at the river corridor  
11 bank and don't show off site migration potential in  
12 the riverway?

13 **MR. DOWELL:** Well, the way that that model  
14 once it gets to the river, it's as far as we need to  
15 know. But the other thing to understand about those  
16 models is that all the modeling that you saw that  
17 Gerry showed you came out of the EIS, I believe.  
18 Gerry, is that where your source was for that?

19 **GERRY POLLET:** The maps, yes.

20 **MR. DOWELL:** Those sites or all the  
21 modeling is unmitigated. That means that no  
22 remediation is taken. That's the way we do those  
23 models -- that modeling. So as we go through these  
24 decisions, it's going to significantly affect the  
25 effects of those plumes and what actually gets to

1 the river to all of the constituents that Gerry was  
2 looking at. So the modeling stops there because  
3 effectively, as soon as it gets there we know what  
4 we need to know. It got to the river and that's --

5 **AUDIENCE MEMBER:** It's already in the  
6 river. It's already in the river, flowing  
7 downstream, correct?

8 **MR. DOWELL:** What? You mean material,  
9 today, is flowing downstream?

10 **AUDIENCE MEMBER:** From Hanford, yes.

11 **MR. DOWELL:** Yeah. We have samples of  
12 carbon tetrachloride actually from the river, well  
13 below minimum standards that are detectable but  
14 below drinking water standards. So from a  
15 concentration perspective, we don't have  
16 constituents like plutonium or americium reaching  
17 the river at this point. We don't have any of the  
18 things we are talking about here coming from this  
19 site reaches the river.

20 **MR. NILES:** Next question please.

21 **AUDIENCE MEMBER:** I'm trying to clean up  
22 some confusion that I was getting from the variety  
23 of presentations that happened. And I also must  
24 tell you that I watched the recording of the  
25 youtube, the Seattle hearing that took place prior

1 to here, so I have at least some insight to what's  
2 been said prior to this time. I want to go to a  
3 point that was raised by Gerry Pollet regard the  
4 standards for clean up of plutonium which seems to  
5 have varied between government sites. And once  
6 Gerry was done speaking and I asked him about that  
7 question and then a person from the Environmental  
8 Protection Agency over here said to me that there is  
9 no standard right now for plutonium cleanup at this  
10 site. I don't understand why this is being  
11 allowed. What allows this variability between  
12 sites? What is assumptions drive that and does the  
13 law allow that to happen?

14 **MR. DOWELL:** The answer is that the law  
15 does allow that to happen. The difference in the  
16 variability was actually on the graph that Gerry  
17 showed. If you look at the use end and what they're  
18 trying to protect, with those standards and  
19 realizing that they're in different states the use  
20 for Hanford is to protect a worker. It's not for  
21 residential usage. Significant difference in land  
22 use and the need to protect what that site is going  
23 to be used for. And that's what makes this  
24 different because in this inner area, the land use  
25 prevents extensive public use. There will be no

1 risk to human health and the environment from that  
2 standpoint because of the prescriptive uses that  
3 we'll have in this decision that are going to be  
4 directed by a final record of decision that gets  
5 made.

6           **AUDIENCE MEMBER:** Well, this raises  
7 another issue for me. If the law allows this  
8 variability, then what's the time frame that the law  
9 sets that allows that variability. Because if you  
10 look at different time frames, there can be very  
11 different kinds of realities that affect the  
12 disposal of waste at these sites. So what is that?  
13 What is the time frame that you're supposed to  
14 consider when you consider this variability, this  
15 site's going to be industrial, this site's going to  
16 be residential, etcetera?

17           **MR. DOWELL:** Right. The alternative that  
18 we'll follow will lead us to a record of decision.  
19 That record of decision is the permanent record of  
20 decision. So there's no time limit on that.

21           **AUDIENCE MEMBER:** So you're making this  
22 up? That's basically what you're saying. You're  
23 making this up. You're going to make up a record of  
24 decision that says, this is the way this site's  
25 going to be and it's not going to change over and ad

1 infinitum.

2           **MR. DOWELL:** No, no. The record of  
3 decision tells us how we're going to remediate the  
4 material. And then once that material is  
5 remediated, that standard by which we talked about  
6 going through the engineering process, the design,  
7 implement it, and we'll monitor it. It will be  
8 monitored with --

9           **AUDIENCE MEMBER:** Over what time frame?

10           **MR. DOWELL:** It's monitored until there is  
11 no longer a risk of health and human safety.

12           **AUDIENCE MEMBER:** Do you have a time frame  
13 for that?

14           **MR. DOWELL:** Well, the time frame -- its  
15 continuous presence. Until there's no longer a risk  
16 to public health.

17           **DENNIS - EPA:** Maybe explain here a little  
18 bit. In regards to the cleanup, in the State of  
19 Washington we really have only two choices. We have  
20 unrestricted type cleanup choice, which we made  
21 along the river. And we have an industrial cleanup.  
22 We have all bought into the fact that this 200 Area  
23 is an industrial area and so in essence, what you're  
24 going to see over the next several years is  
25 proposals to cleanup to protect industrial type

1 situations. Having said that, we did run other  
2 analysis. We ran tribal scenarios. We ran what we  
3 call an intruder scenario where someone actually  
4 gets into the waste, they bring it up and it's all  
5 that risk is calculated.

6 **AUDIENCE MEMBER:** Is that on this disk?

7 **DENNIS-EPA:** I don't know what disk you  
8 have there. If it's the Feasibility Study, it is.  
9 And the other thing. I'm right with you. I mean  
10 it's hard to fathom having to control access into  
11 these sites for perpetuity. But the reality is we  
12 already made a number of decisions at Hanford that  
13 that is the case. And we have to be hopeful that  
14 the federal government stays in place and that there  
15 are people out there to protect over the long term.  
16 And that's just the nature of the beast. And I  
17 know. I don't like it and I know a lot of people in  
18 this room don't like it.

19 **GERRY POLLET:** Let me clarify. Since you  
20 brought up my slide. The slide I showed, and we can  
21 put it back on the screen if you want. It clearly  
22 showed that the proposed cleanup standard for  
23 plutonium that the Energy Department is proposing is  
24 2900 picocuries per gram of radiation in the soil  
25 along the Columbia River we use 35.

1           **MR. DOWELL:** Before you go on, Gerry,  
2 we're not proposing a cleanup 2900 picocuries per  
3 gram. That's not a limit that we go by.

4           **GERRY POLLET:** Okay. So do you want me to  
5 read you a page out of your document and cite it  
6 because it did cite it in the slides and we can put  
7 it up. And the bottom line is in terms Lawrence  
8 Livermore, the slide showed two different standards  
9 being applied. 2.5 versus 2900, or 10 and 10 is for  
10 office and industrial site use.

11           **MR. DOWELL:** It's a different definition  
12 of industrial site.

13           **GERRY POLLET:** Right. And then we had a  
14 dispute over whether or not the reasonable maximum  
15 exposure scenarios controls here. Is it reasonable  
16 to believe that the only people exposed will be  
17 industrial workers for thousands of years? Because  
18 that's what Washington State law says. It's  
19 reasonable maximum exposure scenario over all time  
20 frames.

21           **MR. NILES:** Let's move on to some other  
22 questions.

23           **AUDIENCE MEMBER:** I've got two very  
24 different questions. One is sort of give me a  
25 budget picture, just sort of give me your best shot

1 at a budget picture for the next four years. And  
2 the other is why, when you fission a bunch of  
3 uranium, you get numerous fission products and those  
4 products produce radioactive daughters, and I'm not  
5 quite sure why you're singling out two or three  
6 radionuclides and how that thought process works.  
7 Are those the most dangerous or the longest lived or  
8 the most mobile, or what?

9 **MR. DOWELL:** The first question on  
10 budgets, President's budget as you saw if you came  
11 to the state of the site meeting was a billion --

12 **AUDIENCE MEMBER:** DOE's budget.

13 **MR. DOWELL:** Which one?

14 **AUDIENCE MEMBER:** I'm sorry. You told me  
15 President.

16 **MR. DOWELL:** Well, we submit it and it's  
17 called the President's budget when it comes out.  
18 For fiscal year '12, it was a billion and six  
19 million, 1.006. And we expect to have stable  
20 budgets for those, for that time period. The best I  
21 can say. If I said we're going to get that every  
22 year, you know, I got quoted, it's outside my  
23 bounds. We're expecting stable budgets, but as you  
24 all read in the paper, there could be some  
25 instability. That's what we're expecting right now



1 at Richland.

2 **MR. DOWELL:** Office of River Protection  
3 has a similar budget, it's more, about a billion  
4 two. So it's about 2.2 billion dollars that we have  
5 invested in Hanford and if it stays stable, that's  
6 what we're expecting through 2015. Then your second  
7 question, you kind of captured it yourself. It is  
8 driven by the predominant risk. These are the  
9 predominant risks in the radionuclides that if we  
10 mitigate these we capture most of rest. If you  
11 capture those three, you're going to get most  
12 everything else.

13 **MR. DOWELL:** Correct. A lot of the  
14 accountables, you know, when we talk about, for  
15 instance, PW-1. That site started in 1949 and went  
16 through 1972. And it's got about 3.6 million  
17 gallons of stuff. So a lot of the chemicals are  
18 gone. When look at the tanks and you hear the  
19 number 1600 different types of chemicals, those  
20 still exist. They've been isolated. So the  
21 radionuclides are really the heart of the matter for  
22 us and that's how we characterize those sites.

23 **CHUCK JOHNSON:** I'm Chuck Johnson, from  
24 the board of Columbia Riverkeeper. I want to come  
25 back to the question of this being able to guarantee

1 that this is an industrial site. I'm just wondering  
2 which is a more, in your opinion, rational  
3 assumption to make that we can guarantee a site be  
4 an industrial site for 23,000 years or 230,000  
5 years, or that we can find the money to dig up that  
6 plutonium and take away that requirement that would  
7 guarantee the site remain an industrial site. Which  
8 do you think is more reasonable?

9 **MR. DOWELL:** It's a very good question.  
10 It's the question that is probably the heart of what  
11 we're here for tonight. How do we balance a  
12 decision in perpetuity when you can't even say  
13 perpetuity for a government or social system or  
14 anything like that. I go back to the CERCLA process  
15 because it drives the answer to both questions.  
16 Again, we trying to balance those five things we're  
17 talking about before and cost is one of them. And  
18 where cost comes into effect is when I look at the  
19 resources that we're going to get. We just talked  
20 about those and we look at the number of sites that  
21 we have and we balance the risk of what's remaining  
22 and try and get to the things that have the highest  
23 risk top people and human health and the  
24 environment. So in doing that, ideally, if we could  
25 put the three or four trillion dollars that it took

1 to make these weapons back into the cleanup, it  
2 would be nirvana. I would do exactly what you're  
3 asking me to do. I can't do that because I have to  
4 balance those risks. I'm in a system of constraints  
5 and when I look at that system of constraints, it  
6 drives me to do risk-based decision making.

7           So when we assess the risk and we talk  
8 about things like mobility of plutonium, we do the  
9 best study we can. We make a best effort we can we  
10 get as much information as we need to make that  
11 decision. We balance that decision according to  
12 those five things. It's not driven by budget, but  
13 we got realize that there's other decisions that  
14 have to be made that balance the risks of those  
15 decisions.

16           The other point was in CERCLA process,  
17 this is the thing that does it for me about the  
18 10,000 years or 20,000 years -- I'm like you. I  
19 don't know if the government is going to be here in  
20 10,000 year or a Missoula flood is going to come or  
21 what's going to be happening in that time frame.  
22 There's a lot of risk in the future. What I do know  
23 is this, CERCLA requires me hand-in-hand with the  
24 EPA to revisit the effectiveness of these plans and  
25 it's not just the technical effectiveness. It's the

1 programmatic effectiveness. So if somebody in the  
2 future wants to take the fence down in this  
3 industrial area, I'll be right with you because I'd  
4 be screaming about that coming down. We've got to  
5 make sure we have long-term presence and a  
6 commitment to maintaining those controls. We have  
7 to do that.

8 **AUDIENCE MEMBER:** You're going to be dead  
9 in 50 years, probably like me. Are we doing to dig  
10 you up and get accountability at that point?

11 **MR. DOWELL:** I hope not. Real quickly,  
12 let's say budgets continue down or we want to  
13 release that area somehow. What are the  
14 technologies that we're going to be able to leverage  
15 in 20 to 30 years that will help us do that. We  
16 don't even know what's going to be out there. So  
17 let's talk realistically what's in the future in  
18 your future and how this gets mitigated because we  
19 can't talk 10,000 years. That's where the risk is  
20 but how are we going to be able to mitigate that in  
21 the future with future technologies? I'm hopeful  
22 that if those technologies can come to bear, but the  
23 decision has to stand and the decision is made based  
24 on a fact of what we have today. And we made that  
25 balancing those risks and then we revisit the

1 effectiveness of that decision and that's the law.

2 And that's what you adhere to is the law.

3           **MR. NILES:** Before we have the next  
4 questions, I thought I'd get a show of hand who has  
5 outstanding questions before we get to the formal  
6 comment period. Let me just do a time realistic  
7 check. We have many some complicated questions that  
8 take long drawn-out answers and I would guess it's  
9 going to be another 40 minutes before we get to the  
10 public comment period, if we keep going the way  
11 we're doing. If that's what you want to do that's  
12 your choice to do that. We will stay as long as  
13 need be. But there is a formal opportunity to  
14 provide a comment that will have to be responded to  
15 and certainly this is a good dialogue that we will  
16 not get once we shift into the formal comment  
17 period. So I just want to offer that out to you as  
18 we continue.

19           **AUDIENCE MEMBER:** So if we keep asking  
20 questions, we won't get an opportunity for the  
21 formal --

22           **MR. NILES:** You will. You will We're not  
23 going to cut that off.

24           **AUDIENCE MEMBER:** So we can be here all  
25 night?

1           **MR. NILES:** I just think that not  
2 everybody will want to stay here all night.

3           **AUDIENCE MEMBER:** We're checking to see if  
4 we can have the room that late.

5           **GERRY POLLET:** Since the court reporter is  
6 recording us, can we ask that everything that's been  
7 said, be considered comments so far?

8           **MR. DOWELL:** Absolutely.

9           **KARIN:** No, no.

10          **MR. DOWELL:** Oh, it's not? Why not?

11          **MR. NILES:** If we want to do that, I would  
12 suggest that we go into that formal public comment  
13 and then come back to the question and answer.

14          **MR. DOWELL:** So what do you folks think of  
15 that?

16          **AUDIENCE MEMBER:** Will you describe the  
17 formal public comment again.

18          **MR. NILES:** Well, it's not that much  
19 different than what you're doing. It's giving  
20 people an opportunity, but it's more to provide a  
21 comment as opposed to a Q & A. Here we're trying to  
22 -- we've gotten far beyond just trying to clarify  
23 some things. We've gotten into a bit of discussion  
24 which is a great thing for people to understand and  
25 I think the agency takes a lot out of that. But if

1 the formal comment period you're not going to get a  
2 dialogue back.

3 **AUDIENCE MEMBER:** I have a clarifying  
4 question that's very, very quick.

5 **MR. NILES:** All right. Let's hear it.  
6 Actually, the woman right here.

7 **AUDIENCE MEMBER:** It's not really a  
8 clarifying question, though. It kind of is in a  
9 way. It's to stimulate some thought. I'm going to  
10 go ahead. So I was looking at the history of  
11 Hanford and my question is to you, after I say a  
12 couple things is, why should we believe anything you  
13 say? First thing, is that history is is that the  
14 deactivation was 2000 and then you continued to  
15 dump stuff. And every time something came up, you  
16 tried to sneak in something that said you want to  
17 continue to dump stuff. So here we are talking  
18 about cleaning up some stuff that was already dumped  
19 and you continue to dump stuff and then now you  
20 still want to dump stuff there. So think about  
21 that, you know, when we make our comments, because  
22 there's always -- you always have an agenda and I  
23 know you're trying do the best you can but we have  
24 to get really serious with this. I mean, I  
25 understand everything that's going on an I'm really

1 unhappy. It's not a question except how can we  
2 trust you.

3 **MR. DOWELL:** Okay. How can you trust me?  
4 Well, from a personal integrity stand point, I'm  
5 part of the public.

6 **AUDIENCE MEMBER:** No. Not you, not just  
7 you. You seem like a really nice a guy.

8 **MR. DOWELL:** I'm not a very nice guy, I'm  
9 sincere.

10 **AUDIENCE MEMBER:** Your presentation was  
11 great but --

12 **MR. DOWELL:** Hard working for you.

13 **AUDIENCE MEMBER:** -- I don't believe a  
14 thing that comes out of your mouth because you  
15 represent the Department of Energy.

16 **MR. DOWELL:** If I work for a place that  
17 doesn't have that integrity, I won't work there. So  
18 I'm still working there. I feel that the  
19 administration now -- I can't talk to a precedent or  
20 a previous decisions. I think there was times when  
21 that happened. I think there was misunderstanding.  
22 I think, you know, in this day and age you look at  
23 from the top down, you look at a bottomless  
24 commitment to transparency and I take that to heart.

25 **AUDIENCE MEMBER:** So you your saying



1 somebody else did all this but now it's going to be  
2 different. Is that that what you're telling me?

3 **MR. DOWELL:** No. I'm saying I can't speak  
4 to the precedent of that. I can just can speak to  
5 what I do, what my manager does, Matt McCormick. I  
6 can speak to the people that are around me and I  
7 think it's -- if that was what it was before, then,  
8 yes, it is different.

9 **MR. NILES:** I've just been told we've got  
10 the room until 9:30. Then the crew at the  
11 university needs to start breaking down this room. I  
12 would suggest, unless someone really does have a  
13 quick clarifying question.

14 **AUDIENCE MEMBER:** I do.

15 **MR. NILES:** All right. Then I will hold  
16 my speaker to a quick answer. And it's hard because  
17 Hanford is so convoluted to give a quick answer.

18 **AUDIENCE MEMBER:** The the question that I  
19 have is a clarifying question. Let me see if I can  
20 rephrase what you said -- I think you said a minute  
21 ago. What I understood is that no matter whether we  
22 are correct in saying that plutonium does have  
23 mobility, etcetera, whatever the things are. Even if  
24 all those things are true and even if you were to  
25 accept that, that ultimately you're constrained by

1 that being only one of five or six factors that  
2 you're forced to deal with in the Department of  
3 Energy in a making your decision; is that right?

4 **MR. DOWELL:** All I can say is that, it is  
5 input to that decision. And that's a valid  
6 decision. But, I'll tell you one thing, when we  
7 hear it at all four sites, we take it very  
8 seriously. So we look at the things that we've  
9 heard and they're similar to we've heard tonight,  
10 the recurring theme is get more plutonium out of the  
11 ground. So we've heard that loud and clear. That's  
12 something we'll take back. We're going to evaluate  
13 that very, very, honestly and make sure that we do  
14 the right thing. So the answer is yes, it is one  
15 element, but committed to looking at it hard.

16 **DENNIS-EPA:** One other clarifying point is  
17 that again, we look at each waste site individually.  
18 So he used the example if it was mobile. If it's  
19 mobile, we're going to make a different type of  
20 decision. Because again, there we're -- we got to  
21 protect the groundwater. And so you've got to look  
22 at it individually and so again, what may be good  
23 for a plutonium site may not be good for a chromium  
24 site.

25 **AUDIENCE MEMBER:** I have a quick yes or

1 no question.

2 **MR. NILES:** Good. Yes or no question.

3 **AUDIENCE MEMBER:** This might be a question  
4 for the EPA but how much consideration has been  
5 given to climate change impact in the creating this  
6 is proposed plan and how much has been given to sort  
7 of major floods which could affect this site? How  
8 much of that has been taken in consideration when  
9 coming up with this plan?

10 **AUDIENCE MEMBER:** And earthquakes.

11 **MR. NILES:** You can't answer that yes or  
12 no.

13 **MS. LAIJA:** We have not looked at that  
14 time scale for this decision. I can elaborate or I  
15 can leave it at that.

16 **MR. NILES:** Any other yes or no questions?

17 **AUDIENCE MEMBER:** You talked earlier about  
18 removing a substantial amount of plutonium for Low-  
19 Salt sites. Can you define substantial, please.

20 **MR. DOWELL:** I quickly change my answer  
21 because that's one one that Ken brought up too. When  
22 we say substantial, we're taking two feet of  
23 material that we talked about in the Z-9 crib. 30  
24 centimeters was taken in 1976 to '77. We're taking  
25 two more feet. That's the answer. That's it for

1 now. So that's a good place for you to input. If  
2 you think that we should be taking more of that --  
3 again, when you look at that site, the remediation,  
4 there are original remediation plans which was legal  
5 which was effective, and protecting human health and  
6 the environment was capping that site and we're not  
7 going to taking any plutonium out. This is for the  
8 mobility site, too, because when we did the -- Gerry  
9 showed you data from the EIS, environmental impact  
10 statement, and when the Central Plateau for these  
11 sites the same model that showed those plumes shows  
12 plutonium stable.

13 **MS. LAIJA:** J.D. -- I think your question  
14 is how much it getting taken out. At those, the  
15 Low-Salt sites where we talk about the majority of  
16 it, that's about 90 percent. At the High-Salt sites  
17 where we say two feet, or substantial that's about  
18 half, 50 percent.

19 **THE AUDIENCE:** How do you know it's half?  
20 And why is it half and not all of it?

21 **MS. LAIJA:** As far as how do we know it's  
22 half, we look at the inventory and the process  
23 knowledge on the sampling data that we had to  
24 determine how much is there and then going --  
25 calculating how deep it would go and how much we

1 would remove, that's how we determined those  
2 numbers.

3 **AUDIENCE:** MEMBER: That was sampling data  
4 from the the '50s or the '70s, correct?

5 **MS. LAIJA:** We use historical process  
6 knowledge so some of it is older and then more  
7 recently data from our remedial investigation. And  
8 that is a long process that's but the short answer

9 **MR. DOWELL:** Well, let's talk about  
10 sampling because the Z-9's C-1A and Cribs, trenches  
11 all had samples as recently as 2006. That includes  
12 --

13 **AUDIENCE MEMBER:** That's not annual  
14 samples.

15 **MR. DOWELL:** No, but you see we use those  
16 samples to characterize only what's necessary. These  
17 samples, you know, when you look at a sample like  
18 this, it's very complex sample. It's a large tube,  
19 it's not like a sample of dirt just coming out of  
20 the top three feet. It's a bore hole sample and it's  
21 actually like taking a well pipe, pounding that  
22 down into the ground you get a full straight  
23 stratification pour sample bringing that back out  
24 using all use all radioactive measures to prevent  
25 contamination spread, and then evaluating that

1 sample. These cost about a million dollars a piece  
2 when we sample, so we want to minimize those or cost  
3 perspectives.

4 **AUDIENCE MEMBER:** How far down do you  
5 bore?

6 **MR. DOWELL:** It depends. It depends. It  
7 depends on where we're boring, depends on what we're  
8 looking for. You go where the constituents. So if  
9 we know and have process data or three base samples,  
10 and we're trying to do our characterization bore or  
11 a well, we'll go where we think characterization is.  
12 And usually they're very accurate. You only want to  
13 drill or bore once and use that money wisely. And  
14 we only do what's necessary enough to characterize  
15 the extent of that flume. It's a balancing act  
16 getting the right amount of information minimizing  
17 the amount of costs in getting that. But  
18 ultimately, we get enough information.

19 **THE AUDIENCE:** So do you only have money  
20 to do the job.

21 **MR. DOWELL:** I'm not saying that at all.

22 **AUDIENCE MEMBER:** It sounds like it.

23 **MR. NILES:** Okay. Any other questions?

24 **AUDIENCE MEMBER:** Public historical are  
25 you working out to the data that you're finding, how

1 many surprises do you have bases on what you're  
2 expecting to find in the area. So how good is the  
3 historical -- you're basing this off of the known  
4 input were the 1960s records crap

5 **MR. DOWELL:** It's more than that. Less  
6 than necessary as accurate. I won't use the "C"  
7 word. If they are not accurate enough or if they're  
8 inadequate, we sample. We have to fill that  
9 information with sampling. You have to have enough  
10 information necessary to make the decisions, so we  
11 fill up the information that we don't have from  
12 process knowledge with sampling. And in the cases  
13 we're talking about, Z-9 trench, uranium, the High-  
14 Salt field, we've got bore hold samples and deep  
15 well samples, 2001, 2006. And we continue to take  
16 log samples, scintillation log samples and samples  
17 from those time periods. So it's not all 1990's and  
18 '70s and the '80s. And we have to have enough  
19 information to get us through the CERCLA process to  
20 that decision.

21 **AUDIENCE MEMBER:** So how much of this  
22 model material happened in perpetuity.

23 **MR. DOWELL:** Annually we make an  
24 assessment of all sampling information that we have  
25 on the site.

1           **AUDIENCE MEMBER:** But you're not sampling  
2 annually.

3           **MR. NILES:** Can I move us along. It sounds  
4 like we're not going to get to where people are  
5 satisfied with the answer. I think that's something  
6 that you're going to have to make in your comment.

7           **MR. NILES:** We've got a question over here  
8 and right there and then let's go to public  
9 comments.

10           **AUDIENCE MEMBER:** Were any a proposed  
11 remediation methods, do you guys consider any  
12 underground fencing for, you know, to preventing  
13 further, you know, not migration not of the soil or  
14 contaminants but, you know, something that's open  
15 that can let things go through to protect, like,  
16 animals that go down and bring stuff back out. I  
17 was imagining this wildlife refuge with the  
18 industrial are in the middle and I've heard of the  
19 animals getting in and spreading the contamination  
20 and then also if there is kind of underground  
21 fencing that locked you could get back through it if  
22 you needed to. That if in 100 or 200 years someone  
23 trying to dig a basement and they get to this and  
24 say, "Okay, wait. Below this maybe there is some  
25 major contamination." So about like underground



1 fencing -- and then also reference to the financial  
2 differences of two feet versus 18 feet?

3 **MR. DOWELL:** So the first question is a  
4 barrier question about the biological risks.

5 **AUDIENCE MEMBER:** Yeah. Not top at the  
6 top but into the ground.

7 **MR. DOWELL:** From that perspective, when  
8 you make these decisions, you look at the  
9 effectiveness and how much you have to remediate  
10 things like plant roots that go down, animals that  
11 dig, and typically the standard is that top layer of  
12 soil. So the first 15 feet or so, depending on what  
13 the decision is or where it is, is that critical  
14 element that prevents this intrusion event of an  
15 animal coming in or a plant that takes the material  
16 out of the ground and turns into a tumbleweed and  
17 ends up blowing into Pasco, or something like that.

18 That's all done in that first eight to 15  
19 feet of soil column. When you talk about barriers,  
20 that's in a three-dimensional standpoint like down  
21 deep or on the sides. There are technologies that  
22 work for specific radionuclides and constituents  
23 that we are testing and using today. They are not  
24 being applied in this decision and they were not  
25 considered for this decision. Technologies don't

1 work for these sites.

2 **AUDIENCE MEMBER:** I mean, so specifically,  
3 in 200 years there's some sort of steel-like,  
4 physical feature, the people go, "Okay, I can't make  
5 a basement here."

6 **MR. NILES:** Like an armored cap or  
7 something like that?

8 **AUDIENCE MEMBER:** Yeah. An underground  
9 cap.

10 **MR. DOWELL:** We lump those things into  
11 what we call institutional controls and everyone  
12 hates that because it's institutional. But that's  
13 the kind of thing we use to mitigate the site and  
14 it's part of the decision so it goes into the record  
15 of decision. Those particular actions are actually  
16 defined in that. Now, right now there's no plan for  
17 a large metal cap or anything like that. It's  
18 basically what you're seeing here and then the  
19 controls for what that site looks like -- Dennis, do  
20 you want to talk to that? No? Okay.

21 **MR. NILES:** And then your second question  
22 I think was the cost difference between two feet  
23 versus 18 feet and, yes, that is in the proposed  
24 plan.

25 **MR. DOWELL:** It's also in your handouts.

1 We did look at other levels. We didn't put it in  
2 the plan that you're seeing. But we looked at four  
3 feet, six feet. It's almost linear, sometimes,  
4 when you look at that and the cost. So from a  
5 program perspective, it's not quite that simple, but  
6 it's close to linear and we can estimate that fairly  
7 easily.

8 **AUDIENCE MEMBER:** With regards to the  
9 observational approach advocated by the State of  
10 Oregon, did the DOE consider that and if so, did  
11 they disagree with it and what were the reasons for  
12 disagreement with it generally?

13 **MR. DOWELL:** We talked about the  
14 observational approach, specifically in the High-  
15 Salt area and when we talk about that it goes back  
16 to why we're remediating that. Again, we could have  
17 satisfactorily met the requirement to protect human  
18 health and the environment by just capping that  
19 material because the material -- and we based the  
20 assumption on the material being stable, not  
21 immobile, but stable. Because our modeling  
22 indicates that these areas of plutonium in the  
23 Central Plateau, the same models that came from the  
24 previous plume diagrams that Gerry had from our EIS,  
25 it shows that this material is stable, not moving

1 for 10,000 years, and that's the extent that we can  
2 model to. So that's the decision that we have. Now,  
3 let's say tomorrow, the day after we make the  
4 decision, we get a better model.

5 In fact, there's no other model out there  
6 being looked at right now, and that model states  
7 something else, we have to remediate according to  
8 what we know and what we discover in the future. So  
9 that's kind of the part of the process of the law  
10 that protects us to flawed decisions. But the  
11 decision we're making right now is not flawed. It's  
12 a good decision based on what we know and we have  
13 enough information to make this decision now. But  
14 we do have the ability, when it doesn't work and we  
15 are required by law to go back and make the  
16 remediation effective for the long term.

17 **AUDIENCE MEMBER:** So what you're saying,  
18 in effect, is that observational approach is the  
19 status quo or something like it. Like, if you get  
20 better information, at some point in the future, you  
21 will revise the decision?

22 **MR. DOWELL:** Observational approach is  
23 usually when you're remediating a site specifically  
24 to protect human health and the environment. So as  
25 you did sampling to determine you got the material

1 out. In this case, we don't have to get the  
2 material out at all. We're taking material out  
3 because we got a lot of comments about it, a lot of  
4 concern from the public, initially, that the first  
5 time we came out of this process. So we changed  
6 that and we're talking two feet. That's how it  
7 changed. So it wasn't required whereas in the  
8 content you're talking about, as we dig down and  
9 we're remediating a site specifically to protect  
10 human health and the environment, we continue until  
11 we have the right level of material out.

12 **MR. NILES:** Okay. So we've had, I think,  
13 a great discussion and I think Tri-Parties agencies  
14 certainly got a lot of feedback and hopefully you've  
15 gotten some clarity on some of your questions. So  
16 we will shift into the formal comment period that  
17 we've got about 60 minutes before lose this room.  
18 So if we could get a show of hands how many people  
19 are anticipating wanting to make a form comment.

20 So we're going to have to try and hold you  
21 to three minutes, or so, and if you want a second  
22 go-round after everyone has had their turn. Karin,  
23 maybe if you could actually start -- I did make a  
24 commitment to the back of the room. So maybe you  
25 could start back there. We've got two people with

1 microphones going around. Paige, I'm going to start  
2 with you as soon as Karin gets to you. Again, I'm  
3 sorry -- this is the part that the dialogue ends and  
4 they just receive the comments. Let me also say, if  
5 you wouldn't mind stating your name. You're not  
6 under any obligation to do so but if you would feel  
7 comfortable stating your name.

8 **PAIGE KNIGHT:** I'm Paige Knight, President  
9 of the Hanford Watch here in town. And I will make  
10 my comments brief. The United States Department of  
11 Energy promised the citizens of the Pacific  
12 Northwest in 1989, that they would cleanup the vast  
13 contamination of the Hanford Nuclear Reservation  
14 which for the past half century has compromised the  
15 health safety of people who have lived in the region  
16 and who have relied on the great Columbia River to  
17 provide water for inhabitants and viable crops. We  
18 are over the sacrifices many have made in living  
19 with the production of plutonium as a deadly  
20 element. This plutonium has already entered the  
21 Columbia River and as evidenced in your reference  
22 guide is a continuing threat to the groundwater and  
23 Columbia River. Plutonium has a half-life of 24,000  
24 years meaning it will take 240 years -- 240,000  
25 years for it to decay. In the early days of cleanup

1 of the site the public was told that it would take  
2 1,000 or more years for the plutonium that  
3 contaminates this 10-square miles and more of the  
4 Hanford site to reach the Columbia. A few years  
5 later, and I remember this meeting clearly, it was  
6 the Oregon Hanford Cleanup Board Meeting, Ken, where  
7 the Department of Energy informed us that they had  
8 discovered the plutonium was much more mobile than  
9 they thought and it was moving more quickly. So I  
10 want people to take note of that and most of you  
11 probably suspected it any way.

12           The simple fact is it must be cleaned up  
13 with due diligence. It must be done to the highest  
14 degree possible, with testing and removal of  
15 contaminants in hot spots, treatment of waste and  
16 safe disposal. The proposed evacuation of two feet  
17 below the crib zone is unacceptable. According to  
18 the Oregon Department of Energy's findings in these  
19 documents, contamination was found at up to 200 feet  
20 deep at some spots. Capping cesium or blending  
21 clean topsoil with contaminated soil is a sloppy and  
22 unconscionable approach. The serious waste needed  
23 to be disposed of at Waste Isolation Pilot Plant in  
24 New Mexico -- or they need to be disposed there.  
25 Saving pennies at the expense of present and future

1 citizens is a pound foolish -- anyhow it's -- thank  
2 you. In here I have a parenthetical, note the  
3 increasing threats to our health and cost of  
4 healthcare right now. We, of the Pacific Northwest,  
5 have had to fight for every advancement in cleanup  
6 of the site. As we slowly move forward in the  
7 cleanup, new plans continually arise to bring more  
8 waste here and to do less than that which provides  
9 health safety and the future for the region and its  
10 inhabitants.

11 It is impossible to promise that no one  
12 will live in the Central Plateau area in the decades  
13 to come. That is not the answer. We want a  
14 "surgical approach," and there I am using the  
15 comment from the Oregonian today. Do this cleanup  
16 effort. We have been promised.

17 **JAN CASTLE:** My name is Jan Castle and I  
18 would second everything Paige just said. I think it  
19 is -- there is no reasonable expectation of being  
20 able to keep control of this site for as long as  
21 would be necessary. That's just impossible.  
22 Therefore, we are morally bound to get as much  
23 plutonium out of there as possible. The two foot  
24 limit does not sound like it will be adequate so I  
25 would like to see you continue to do the checking



1 and continuing to go until you find that you've  
2 gotten it. I know it will be expensive but it is  
3 absolutely necessary. This is land that belongs to  
4 the tribes. To leave this here and expect that it  
5 will be an industrial site seems to me a violation  
6 of a promise long made and as we have violated all  
7 of our other treaties with tribes. So I think it's  
8 unreasonable to clean it up to the industrial  
9 standard. It needs to be cleaned up, period. And  
10 returned to reasonable use to the tribes as  
11 promised.

12 **MR. NILES:** Thank you, Jan. Thanks for  
13 being here.

14 **DVIJA MICHAEL BERTISH:** Hi, I'm Dviya  
15 Michael Bertish from the Rosemere Neighborhood  
16 Association in Vancouver -- sorry? I want to  
17 address the risk-based decision making which I  
18 understand is important regarding trying problem  
19 solve what steps you do first and in what order.  
20 However, I want to remind everybody that within the  
21 past century, some Japanese ancestors placed signage  
22 on the shores of Japan and said, "Don't build here,"  
23 because of tsunami warnings and everybody forgot  
24 about that and built their reactors. And then,  
25 again, more modernly, they were told, if you do,

1 bury them so nothing happens and those decisions  
2 were disregarded. So risk-based assessment planning  
3 long term failed in that regard and now we have  
4 contaminated oceans and food an uninhabitable areas  
5 and if you're going to pay those people \$9,000 in  
6 total for lost property that is tragic.

7           So I think that long-term risk-based  
8 assessment planning needs to, therefore, increase  
9 soil depth removal to the best and the lowest known  
10 depth possible with the high salt wastes that have  
11 been determined to be 100 to 110 feet at present. So  
12 I think you have to go far deeper than what you're  
13 planning. The cost of doing this now is going to be  
14 nothing if something cataclysmic happens in the  
15 future. It's not viable to think that any barrier  
16 is going to be maintained in perpetuity. So in this  
17 regard, I think the cleanup standards that are being  
18 proposed here are arbitrary based on the long-term  
19 projections.

20           We need cleanup standards to be far more  
21 restrictive as applied to the site to go as low as  
22 possible to the standard that's already in the  
23 Hanford Reach at 35 microcuries. One other thing to  
24 consider here relative to soil study is that I  
25 haven't heard anything about seismic shift or frost

1 heaving. So when you have vast swaths of solids  
2 that are being bored and/or remediated, are open to  
3 the general atmosphere and we have seasonal shifts  
4 from rain and front that causes soil undulation. And  
5 so the soil isn't going to stay in one place. So  
6 anything that's built is going to move and soil will  
7 fall and the residues that are beneath will rise up.  
8 I haven't heard anything that describes how that  
9 soil mobility will be controlled. Thanks.

10 **MR. NILES:** Thanks for your comments.

11 **LOREN PAULSON:** My name is Loren Paulson,  
12 I had a job once that allowed me to look into the  
13 future on an eerily similar situation as we have  
14 here. In World War II, the U.S. Government  
15 manufactured nerve gas in an obscure plain now known  
16 as Torrance, California. I worked for Shell Oil  
17 Company at the time and the federal government sold  
18 that site to Shell Oil Company to make pesticides.  
19 Pesticides is nothing more than nerve gas. Years  
20 followed and after 40 years of making nerve gas and  
21 pesticides on this sites, housing developments  
22 started to move in. And Shell Oil sold that site to  
23 Cadillac Fairview, a company that then decided to  
24 put in a high-end industrial site across the street  
25 from this housing development.

1           They bored a hole to make sure that  
2 foundations could be poured and covered it up and it  
3 is now one of the Superfund sites in California  
4 right across the street from a housing development.  
5 So as you look in the future with certainty about  
6 how this property is going to be used in the future,  
7 think about Torrance, California, Shell Oil Company,  
8 the U.S. government and nerve.

9           **MR. NILES:** I'm going to have one of you  
10 go to the woman bouncing the baby in case she needs  
11 to leave before this ends and take a microphone back  
12 there. And if we could just get another brief burst  
13 of hands just so the people with microphones can  
14 know where to start heading.

15           **AUDIENCE MEMBER:** Just a rhetorical  
16 question really quick. If we can do half, why on  
17 earth are we not going to do all of it?

18           **JOHN HALISS:** My name is John Hallis. I'm  
19 with Oregon Physician's for Social Responsibility  
20 and I'd like to record that our physicians are in  
21 accordance with the position of Hanford Advisory  
22 Board and that of the Columbia Riverkeepers and  
23 that of the Heart of America Northwest. It is we  
24 support the removal, treat and dispose solution and  
25 we think that it is a great mistake to restrict the

1 depth of the excavation. That the plutonium should  
2 be removed from whatever depth it is found and we  
3 also support removal of the cesium from these sites.

4 **MR. NILES:** Thank you, John.

5 **CHRIS:** My name is Chris and I'm a  
6 physician here, living First I'd like to speak for  
7 Mother Earth. I am very small. She's big. What a  
8 mess. You made it clean it up. Okay. Now, back to  
9 me the doctor. I'm psychiatrist. We have suffered  
10 tremendously from denial. Denial is caused by fear  
11 which leads to a disconnect with thinking and  
12 feeling and it leads to paralysis, lack of action.  
13 And have we not seen a lot of inaction in cleaning  
14 up Hanford. Now, it is so encouraging to me to see  
15 that denial appears to be wearing thin. It's  
16 wearing thin because people keep you know, nagging,  
17 and saying, you know, nothing is not okay. Maybe  
18 two feet is not okay if we went 18 feet. But anyway,  
19 it's helpful. It would helpful, I think, to have  
20 three-dimensional moving models shown. You can do  
21 this with computers now. It's not square miles  
22 we're dealing with, it's cubic miles. Okay. And  
23 it's moving things not static things. So I think  
24 putting models, three dimensional, moving them  
25 around like you can and then showing the stuff

1 flowing might be really exciting and thrilling and  
2 if we could just overcome our fear it wouldn't lead  
3 to so much denial. The antidote to fear is love and  
4 respect for all life. So back to the Mother, could  
5 we all respect and love all life, taking into  
6 account that we are very small. We can only think  
7 ahead seven generations, maybe. For planning  
8 purposes, we can only think ahead two generations.  
9 There is no fence. What there can be is this. If  
10 we will educate two generations below us up to  
11 taking over our tasks when we die, we might be able  
12 to carry it through for the 10,000 generations we  
13 will need. But we will need the seven generations  
14 back, seven generations forward which our tribal  
15 friends suggest to us. Thank you.

16           **ERIC:** Hi, I'm Eric. I'm an intern at  
17 Hanford Challenge from Seattle. You talked about  
18 not having projection for flood area or something  
19 like that. I just feel it would be a lot better  
20 proposal if there were projections for something  
21 like that. It seems like building a house that is  
22 not prepared to take or sustain an earthquake and  
23 any reasonable person knows you ought to have that.  
24 And so I just feel it's as though somebody needs to  
25 go into the data for it to be effective.

1           **AUDIENCE MEMBER:** I have a few quick  
2 points. What I'd like you to define and educate us  
3 about the effects of all of this on us as it gets  
4 more in the Columbia. The health effects, the  
5 salmon, the river, can our kids swim in it, all that  
6 kind of stuff. What exactly are we looking at if  
7 we only do a minimum. And even if we do the maximum  
8 that people are asking and I would like to ask that  
9 it all be cleaned up. Also I think we should  
10 develop alternative energy and I'd like to request  
11 that we have at least 30 days notice, preferably 45  
12 days for these meetings, but I'm glad to see the  
13 turn out.

14           **AUDIENCE MEMBER:** Obviously, I'm not  
15 qualified to adjudicate on the various scientific  
16 models around the migratability of plutonium, the  
17 soil or anything like that but all this being equal,  
18 given the sort of structure problem with DOE's  
19 inability to guarantee what's going to happen in 2  
20 or 300 years, and that's fine. I totally understand  
21 that. That, I think, means that the DOE has a  
22 responsibility and that the parties involved have a  
23 responsibility to default to the more conservative  
24 solution, the more small conservancy solution. The  
25 fact that we can't guarantee 2 or 300 years from now

1 I think is the driving force. The reason why people  
2 point that out so much, the driving force behind  
3 that is the idea that as a result, we need to focus  
4 on removal and safe storage because we can't  
5 guarantee that we'll be able to police the area and  
6 we won't be able to shield the area from people  
7 coming to harm a few hundred years in the future.  
8 And as a taxpayer, or rather as a future taxpayer,  
9 because I'm a poor college student, I think I would  
10 be comfortable supporting that in exchange for peace  
11 of mind even at the cost of greatest expense. Maybe  
12 not the full 18 feet, but I think at the margin,  
13 greater excavation and greater removal of plutonium  
14 from the site can better preserve the possibility of  
15 real harm coming to people in the future.

16 **MR. NILES:** Thank you.

17 **MARGIE:** I'm Margie from Vancouver,  
18 Washington. On the planet earth where I live, where  
19 Hanford is located, is a living breathing planet  
20 where life surges through it's veins. There's no  
21 stopping any exposed liquids, chemicals, solvents  
22 from getting into the soil, thereby contaminating  
23 all soil and groundwater as well being carried in  
24 the air. I do not want any covering up of those  
25 extremely toxic contaminants. It must all be



1 completely cleaned up. And cleaned up to the  
2 standards comparable to the Johnson standards, our  
3 health depends on it. And one way that we can carry  
4 on the message is what the Native Americans do is  
5 they have words of mouth. They have their legends.  
6 It is something that we haven't done because  
7 certainly paper is going to be -- probably not  
8 lasting 24,000 years nor are DVDs. So we are going  
9 to have to tell our children our grandchildren and  
10 carry it on by word of mouth or petroglyphs.

11 **CHUCK JOHNSON:** I'm Chuck Johnson. I'm on  
12 the board of Columbia Riverkeeper and just to start  
13 out with I'd like to support the Oregon Department  
14 of Energy's position on the plutonium wastes that  
15 their proposal to continue to dig below two feet in  
16 the areas where the two foot limit was established,  
17 to discover how much additional plutonium could be  
18 removed to move in a measured way and to continue it  
19 until virtually all of it has been remediated. And  
20 secondly, to support our staff member, Dan Serres,  
21 position that the cesium waste should be removed and  
22 placed in at the ERDF facility, onsite, at that  
23 additional cost. It adds one less thing that we  
24 have to keep track of. And that's the main point  
25 that I'd like to make is that I asked during the

1 question period Mr. Dowell from DOE, the following  
2 question, which is a more rational assumption, that  
3 the U.S. DOE will be able to guarantee that the  
4 Central Plateau will remain an industrial site  
5 without migration outside of the area for 23,000 or  
6 230,000 years. Or if the U.S. Government finds the  
7 money to remove treat and dispose of the plutonium  
8 waste properly now and obviate the need to guard  
9 that site for a ridiculous number of years.

10 Mr. Dowell responded with the CERCLA  
11 process. In the CERCLA process if funding is one  
12 the considerations that led to the decision they  
13 made for only going two feet down talking out only  
14 half of the plutonium under their estimates. I  
15 mean it's immoral and extreme to make the  
16 preposterous claim that the Central Plateau can be  
17 kept an industrial zone in the foreseeable future  
18 and for tens of thousands or hundreds of thousands  
19 of years. And that it's our responsibility as the  
20 people who generated that waste to protect future  
21 generations. And it would be immoral to do anything  
22 else other than to remove all that waste. Thank  
23 you.

24 **MR. NILES:** Thank you, Chuck. We're  
25 seeing some folks leave, so just let me remind you

1 if you haven't filled out one of the evaluation  
2 forms, we do like the feedback and there's a lot of  
3 material out in the hallway.

4           **ROB PEARSON:** I'm Rob Pearson and I have a  
5 brief comment. I think everyone else has made some  
6 really good points. I'm more concerned at the  
7 testing in the CW-5 sites is inadequate. I know  
8 during the Q & A session we mentioned it. Other  
9 sites have been tested more recently in 2002 and  
10 2006. But the fact remains that the CW-5 site most  
11 of it was tested before 1979, and a large portion of  
12 it has not been tested in the trenches since 1959.  
13 I'd like to see that change before you go any  
14 further. Thank you.

15           **LLOYD MARBET:** I very much appreciate all  
16 the comments that have been made this evening. I  
17 understand and feel great sympathy for the people  
18 who are holding this hearing and asking for this  
19 input, when in fact, we have to confront you,  
20 unfortunately, with the insanity of this process.  
21 Three minute comments on 240,000 year decision is  
22 really not a great example of how to democracy  
23 should work. My name is Lloyd Marbet. I am  
24 Executive Director Oregon Conservancy Foundation and  
25 I have been a long-time anti-nuclear activist in the

1 State of Oregon. I'm here representing myself, my  
2 family, and I'm speaking on behalf of the  
3 conservancy foundation. Risk-based decision making  
4 brought us Fukushima. It also is bringing us the  
5 clean up of Fukushima, unfortunately. What are they  
6 doing? Raising the standards exposure for the  
7 people, when, in fact, they should be removing  
8 people.

9 In fact, we even asked Japan to remove  
10 people, evacuate people beyond the areas of the  
11 contamination that we're now understanding is taking  
12 place from this accident. The majority of the waste  
13 that were produced at Hanford were produced in our  
14 lifetime. I mean, we are the ones that are  
15 responsible now for these wastes. And this  
16 contamination should not be pushed off to future  
17 generations. The buck needs to stop with us. It  
18 really does. It needs to stop with all of us. And  
19 it's, I think, immoral to make the kinds of  
20 arguments that you're making here this evening to  
21 pan off what you think is somehow an acceptable form  
22 of disposal on this reservation. From my  
23 perspective, it's a travesty. We deal with great  
24 unknowns and long time frames of impact. Yet, the  
25 unforeseen flaws in risk-based decision making grow

1 great as you grow out into time. It's just been  
2 proven over and over again, especially with this  
3 particular technology and now we're experiencing  
4 climate change. I mean, give me a break. I just  
5 cannot see how you can with a straight face even  
6 talk about control in the uncontrollable situation  
7 that we're getting ourselves into. Thus I think,  
8 that we face a moral question here. We've always  
9 confronted this as a moral question. I'm  
10 disappointed in Oregon's new position now on  
11 Hanford's disposal of these wastes. Now is not the  
12 time to compromise on this. Not at all. Or sign  
13 off on our responsibly to either fully cleanup our  
14 mess now. I want, as a citizen of the United States  
15 of America, for us to take responsibility fully for  
16 what it is that we have done to this environment  
17 now. I don't want to hear about these variables  
18 that set up future generations to have no place to  
19 go for accountability. No matter how sincere your  
20 integrity, your coffin is not going to speak volumes  
21 to the people that demand accountability in the  
22 future for what we do here in this room and from  
23 this room. Anything less is betrayal of our moral  
24 responsibility to future generations.

25 **AUDIENCE MEMBER:** Specifically, about the

1 upcoming record of decision, considerations to  
2 somehow figure out a way to make those million  
3 dollar tests much less expensive that we can have  
4 confidence in the data and really where we need to  
5 focus on. That's very concerning that it costs a  
6 million dollars just to get information that we can  
7 rely on. So invest in that technology. And  
8 specifically about the cesium and the deep waste.  
9 Some sort of robot or remote thing that will really  
10 go down there and get, you know, figure out  
11 something. Get really, really creative.

12 In that record of decision, I'm going to  
13 look for some really great options and details. I  
14 know that you're looking for some sort of details.  
15 Everyone wants -- we want it all cleaned up. You  
16 guys want to clean it up. We also all need to  
17 literally call our congressional representatives and  
18 that's where the money comes and that's where we can  
19 say, I need another half billion dollars to cleanup  
20 the plutonium there. And literally, very simple,  
21 quick statement that captures that summary for them.  
22 They're not tracking all of it but then they can go  
23 back and pass it along to their budget committee. So  
24 specifically about the record of decision  
25 creativity, inspiration. Thank you.

1           **MR. NILES:** Another quick show of hands  
2 who is still wanting to speak. Our folks with the  
3 microphones are scouting you out.

4           **LAURA FELDMAN:** My name is Laura Feldman.  
5 and I've come to a lot of these meetings. What I  
6 have continually perceived as a huge disconnect  
7 between the lay people who come, like myself, who  
8 don't really understand a lot of it, though I know  
9 more about this process than I ever did before. But  
10 still, I mean, I can say please dig up all the  
11 plutonium and take care of the cesium. And I have a  
12 zillion questions and I have a hard time visualizing  
13 it. As that woman said, a little bit of computer  
14 technology would help with that. But the bottom  
15 line for me is that I want to stress stewardship. I  
16 saw a Frontline program last night about the atomic  
17 artists in Japan. I was really inspired because  
18 these are young courageous artists who actually some  
19 of their pieces take place actually inside of  
20 Fukushima or Fuji, one of the plants. They're  
21 really courageous and what they are helping the  
22 Japanese people do is reconfigure a different way  
23 being on this planet. They're now faced with it.  
24 They have to figure it out. So you know, it's huge.  
25 It's just huge and the Japanese are having to learn

1 how to live differently immediately, now, as we  
2 really do too. I mean, that's Fukushima times 50 --  
3 I mean 100 miles up the river and I think it's an  
4 nuclear holocaust waiting to happen.

5 And actually, it's happening now and we  
6 need to engage people and not at these crappy  
7 hearings where I'm presented with information I  
8 can't possibly integrate really. Stewardship needs  
9 to be happening at all levels and I think artists  
10 and Shamans and psychologists and anybody who will  
11 step into this breach and help us connect with this  
12 issue. Help all of us connect with this issue so we  
13 take ownership. Become stewards. We all have to be  
14 together on this. And, you know, in terms of the  
15 government telling you what you're doing, I mean,  
16 we've been lied to and it's a very challenging  
17 process and we all need to take responsibility. But  
18 I highly suggest that you go and check out the  
19 Frontline program that aired last night about the  
20 atomic artists, Chim Pom, I think they're called.  
21 Thanks.

22 **MR. NILES:** Thank you.

23 **SOPHIA:** Hello, my name is Sophia and I'm  
24 here to share my views and those of my husband,  
25 Jeff. We did live for a short while -- is this too



1 loud?

2 **AUDIENCE:** Yes.

3 **SOPHIA:** Okay. We used to live in Zillah,  
4 Washington, which is close to the Hanford waste site  
5 and now we are homeowners here in Portland. And I'm  
6 no expert in all the confusing terminology and all  
7 the technology that you shared in presentations with  
8 us tonight. So what I can offer to you is the  
9 consequences of human exposure to radiation. When  
10 the Chernobyl accident happened, I was a very young  
11 girl in a children's theater group in Sweden. And  
12 we raised money to bring a few of the orphan  
13 children of Chernobyl to a lake for a weekend.  
14 Spending that weekend with those children of  
15 Chernobyl is never ever going to be something that  
16 will leave my memory. There was no way for us to  
17 tell who were boys and who were girls. These  
18 children were my age, at the time. They had no  
19 hair. They had no skin color. They looked like  
20 tiny, dying old men. And it is my expert opinion  
21 that no amount of dollars saving is worth the risk  
22 of reducing a hopeful child to ghost-like dying  
23 body. Removing two feet of the waste at the High-  
24 Salt cesium sites, is obviously not enough to avoid  
25 risk to human life for all future. And I believe

1 that the plan that proposed for the two sites is  
2 based in cost savings objectives. And I want to  
3 remind the representatives of both federal and state  
4 agencies, and especially the EPA, that I'm  
5 ultimately the one that is paying your salary. Your  
6 task, what I'd like for you to do, is to protect  
7 human health and welfare from environmental  
8 degradation. You're not doing an adequate job with  
9 the mentioned two sites. And to put it simply, it  
10 is my opinion that you need to go back to your  
11 offices and do the job I'm paying you to do, which  
12 means RTD, I learned tonight, at the High-Salt and  
13 cesium sites. We made a huge mistake in designing  
14 these unsafe nuclear waste sites. And now we need  
15 to remedy that by fully and rigorously cleaning  
16 them. And I also want to add that you need to take  
17 into consideration climate change impacts and  
18 natural disasters in all planning for Hanford  
19 cleanup. Thank you.

20 **MR. NILES:** Back of the room.

21 **JOEL GARBIN:** Hi, my name is Joel Garbin.  
22 I both work in the storm water industry and also  
23 I'm President of a non-profit called the New Energy  
24 Movement. We educate about what is going on behind  
25 the scenes in breaks for energy technologies that

1 generally aren't reported on by the media. Our  
2 congress is inactive and ignorant of these things.  
3 And, you know, unfortunately, our own U.S.  
4 Department of Energy has been a blockade against  
5 the information release of a lot of these things,  
6 much less of active support. So we've seen it in a  
7 very recent case where an inventor of cold fusion  
8 based technology, has now been embraced by the Greek  
9 government who is actively building three new  
10 manufacturing facilities for that process that could  
11 have been embrace by the American government. Well,  
12 it was not because that particular inventor  
13 recognized that it's not welcome here. This has  
14 been going on, this type of lobbying industry based  
15 partnership that keeps disruptive technologies in a  
16 good way at bay has been really pathetic and a  
17 disservice to our citizens and it continues. So  
18 even though men and women of integrity with the  
19 highest intent, and I do respect, and I believe you  
20 that you're at work here. There are bad seeds much  
21 higher up in the U.S. Departments of Energy. In  
22 fact, there is a book out here that I encourage you  
23 to pick up about break through energy technologies.  
24 I also work in the storm water field and  
25 anyone who has paid attention to these incredible

1 storms that we've been seeing globally, recognizes  
2 the 100-year storm which is supposed to happen one  
3 time every 100 years, in many places is happening  
4 year after year. And even a 500-year storm. So it  
5 was quite dismaying to hear that climate change  
6 modeling particularly rainfall intensity has not  
7 been factored into the clean up plan. That's  
8 inexcusable given the high level of attention that  
9 climate has on the front page of the newspaper  
10 everywhere. We see it. We see it in our climate,  
11 here in Portland. We see it everywhere. I do  
12 think, absolutely, the responsible thing to do for  
13 the present generations and those to come is to do  
14 a more thorough cleanup. Two feet does not get it  
15 done. We should be going as deep as needs to be  
16 done to get all the contaminants. And although we  
17 all recognize to economics based into these  
18 decisions, it's much cheaper to do it now before it  
19 becomes contaminated river cleanup and a devastating  
20 health and environment consequences afterwards. We  
21 cannot afford to cleanup at that point. We can  
22 afford to do it now. So let's make the right  
23 decision and take care of what's our responsibility.  
24 We know there's going to be changes political,  
25 economic, environmental that we're going to face

1 here probably in very short order and we will not  
2 have the cultural memory in two generations to even  
3 know what the hell was World War II, what was the  
4 Cold War? I mean, let's face it. You know, our  
5 children aren't really right now good students of  
6 history, for whatever reason. I've got two of them.  
7 All right. So I know that's the case. So it's on  
8 us. We fouled it up. We've got to be responsible  
9 for cleaning it up. Let's do it now. Thank you.

10 **TOM COMFORT:** My name is Tom Comfort. I  
11 also want to see the cleanup complete and the two  
12 feet is not sufficient. I've done farming in years  
13 past and I can tell you that the earth is not a  
14 solid. A field that you plow one year and remove  
15 all the stones, the next year when you plow that  
16 field there will be more stones. The earth is  
17 moving. The earth is a vibrant alive entity. And  
18 to think that if you remove two feet of plutonium  
19 the rest is going remain stable for perpetuity is  
20 ridiculous. So I want to see more thorough cleanup,  
21 as thorough as possible. Thank you.

22 **KATHERINE:** My name is Katherine and I  
23 live in Vancouver, Washington. I work in Portland  
24 with suicidal kids who are looking for adults to  
25 make right decisions so they can have hope for their

1 future. Hearing this proposal makes my heart hurt  
2 because there is nothing I can find right in it.  
3 Balanced risk is a euphemism for selling them all  
4 out. I was initially encouraged to hear what  
5 Washington law requires but I'm appalled to hear the  
6 Washington Department of Ecology is buying into  
7 unreasonable assumptions. That incomplete cleanup  
8 is sufficient to meet the terms of Washington law.  
9 It isn't. The proposed plan is not thorough and not  
10 protective in spite of the effort being made here  
11 tonight to sell this plan under the guise of  
12 balanced risk. The EPA and Washington Ecology are  
13 obligated to dig up and remove all plutonium, cesium  
14 and other radionuclides and chemicals and safely  
15 place them in a repository. The right thing for  
16 human health and the environment is to do the most,  
17 not the least possible to protect us all. Thank  
18 you.

19 **MR. NILES:** Okay. A show of hands from  
20 folks that have not spoken yet and would like to  
21 still.

22 **KATHLEEN FITZGERALD:** My name is Kathleen  
23 Fitzgerald and I'm a born and raised Pacific  
24 Northwestern. I'm a massage therapist. I'm the  
25 mother of son who is 27 who lives up in the Gorge.

1 I have a lot of family up there. I've been up  
2 there. It's God's country. Hanford is built on an  
3 earthquake fault and if we have an earthquake, which  
4 we all know can happen and things are changing,  
5 there is really good chance that might happen and if  
6 it does, it's going to cause radiation, radioactive  
7 chemicals to spill in to the Columbia River and go  
8 all the way down through more of God's country into  
9 the ocean that would send a 500-mile radius all  
10 throughout that region will be pretty much  
11 uninhabitable. So that's a good chance that that  
12 could happen. I agree with what's going on here as  
13 far as complete cleanup, as far as we can get. I am  
14 really disappointed every time I come to one of  
15 these meetings -- sorry, I'm trying to keep emotion  
16 out of this.

17           Every time I come to one of these  
18 meetings, these people stand up here and speak and I  
19 want to like them. She's really nice. And the  
20 other guy's -- you're a pretty nice speaker but you  
21 talk really fast. There's no emotion. You're  
22 disconnected from what you're saying. You have no  
23 idea, really, what you're saying. You think you  
24 know what you're saying, and it sounds good, but yet  
25 here I am at a meeting we're talking about the most

1 radioactive site in the Western hemisphere in the  
2 whole United States. And Hanford was decommissioned  
3 in 2000, but here we are still -- you guy's want to  
4 still truck in more nuclear waste, when you haven't  
5 even addressed what's happening in the current  
6 situation and you still want to do that and that's  
7 the way you always are. You say, "Oh, yeah. We're  
8 going to do this and we're going to do that," Blah-  
9 blah-blah. But now you want to cleanup half of  
10 what's there. You want cap stuff off. EPA talks  
11 about the High-Salt risk that's immediate -- that's  
12 the one that's immediate going into the water. Yeah.  
13 And you don't even want to clean that up correctly.  
14 Stuff is already leaking into the Columbia River. We  
15 already know that. I don't even want to buy fish  
16 out of there. Okay. So what I'm saying to you is  
17 as steward of this land. I love this place. The  
18 Columbia Gorge is my home. That's where I come  
19 from. The DOE and EPA need new samples. You did  
20 one in 2001, 2006, now it's time for another one in  
21 2011. The plutonium could potentially move. How do  
22 we know it hasn't moved since 2006? How do we know  
23 where it currently is now, and how do we know how  
24 far to dig? I think two feet is not -- I mean, two  
25 feet. You even said yourself that digging -- the



1 possibility of an animal to dig is maybe even 18  
2 feet. That's what I think I heard you say. So I  
3 think you need to at least go down, maybe I'm wrong  
4 but I'm not sure, but it just sounded like it needed  
5 to be more than two feet. So I think you need to  
6 update the information so that you have more  
7 information to go on.

8           The long-term risk-based assessment plan  
9 is not an option. I agree with that. And I urge  
10 and demand the EPA and Washington Ecology to insist  
11 the plutonium, cesium and other radionuclides and  
12 all the chemicals and everything be completely  
13 cleaned up as much as possible. So here's just a  
14 little bit more. Right now as early May 19th, 2011,  
15 there was a letter sent out from a lot of people  
16 that represent us. And I think it was May 23rd,  
17 2011, there was a public hearing about them trying  
18 to dump even more plutonium out there in Hanford.  
19 That was a couple months ago. So on the 23rd, what  
20 I was talking about, they shouldn't do that. So I  
21 don't trust you. I don't trust what's going on  
22 here. It doesn't matter the money. I think we  
23 should spend the money and get it cleaned up. I  
24 don't think that we should wait. I don't think it's  
25 good idea. Please, I'm begging you to clean it up

1 right. Okay. Don't wait. Thank you.

2           **AUDIENCE MEMBER:** I just wanted to quickly  
3 register my opposition to the absolutely pitiful  
4 plan. I'm thinking about while still having decided  
5 against the 12,000 truckloads. I was floored that  
6 this even came up before that decision was even  
7 made. I wish I could give you suggestions but I'm  
8 the secretary of a hospital and I think I do my job  
9 okay. And I hope that you do your job okay, but  
10 clearly, clearly it is not. Two feet is pitiful and  
11 this being the hottest spot in the Western  
12 hemisphere, I can't imagine that you could show your  
13 faces at international conventions that address this  
14 sort of thing. I know in Sweden, they would laugh  
15 at us, I mean, we would be ran off this planet if we  
16 really, honestly looked at this. I tried to explain  
17 where I was going to my eight-year-old daughter  
18 before I came here, and even she clearly understood  
19 that this terrible, terrible idea. Thank you.

20           **MR. NILES:** Thank you. We have a couple  
21 more hands up.

22           **AUDIENCE MEMBER:** I'm -- I guess the word  
23 is shocked that we're considering a remediation that  
24 is going to require care in perpetuity while you  
25 can't even find the resources to do as much as we

1 can in the present to be adequately characterizing  
2 the site. And I've heard talk about, you know,  
3 vitrification and other futuristic technology that  
4 ten years might get there when we're limiting right  
5 now the resources that will provide towards doing  
6 removal and cleanup that we could do with the  
7 technology that we do now. So it's just struck me  
8 that -- that the promises that the same person is  
9 making and seems to be heartfelt is just crazy  
10 because in the next sentence you're saying what  
11 you're not doing what we could do.

12 I'm concerned about the CERCLA process. It  
13 seems to me that leaving it in the state of deciding  
14 what the remediation will be and I was really glad  
15 to hear that there was some mitigation going on and  
16 some stabilization. But it was really reassuring  
17 from last year, but that as long as long as we  
18 characterize it as not yet cleanup, that the Navy  
19 can continue to bring things there. And I think  
20 that's -- I'm concerned that what I hear about  
21 leaving things in perpetuity in this site will mean  
22 that this is a site that by default will become a  
23 place that will become a repository. And that's all  
24 I've been hearing since I've been coming to these  
25 meetings. So I'm, once again, submitting that

1 concern. And I want to recognize and honor the  
2 people who have already been harmed, the  
3 Downwinders, the tribal people and all of the people  
4 include my uncle who was based at Hanford during the  
5 Army and never told. And I just lost my nephew to a  
6 very rare disease that was probably generated by  
7 that and so the assurances that care and perpetuity  
8 will happen and the people who are already suffering  
9 have experienced no accountability to the harm that  
10 already happened. I just don't really understand  
11 what about taking it and cleaning it up you don't  
12 understand. I mean, this not reassuring. Thank  
13 you.

14 **JACOB O'BRIAN:** Hello, my name is Jacob  
15 O'Brian. I'm 30 years old. I was born into this  
16 world and I didn't have a choice about the decisions  
17 that were made before my time, the mess that was  
18 created. To be honest, I'm pretty angry that we are  
19 in this situation that we are having this  
20 conversation right now. That we've been having this  
21 conversation and that the best you can propose is  
22 two feet. It's crazy. It's ridiculous. I have a  
23 14-month-old son at home. Having him has changed my  
24 perspective of the legacy that we leave. And I  
25 don't want him to have this legacy. I don't want

1 his children to have this legacy. I don't want any  
2 future generations to have this legacy. I don't  
3 know that I can be very articulate about this  
4 because I -- this is in many ways a new issue to me  
5 but one thing that I do know is that I work for a  
6 small firm. We're a data visualization firm. I  
7 work with data all day long. I understand how  
8 difficult it is to get a clear picture of what's  
9 really going on when you do not have full and clear  
10 data sets. When you don't have information that  
11 fully tells the story and your'e trying to do models  
12 or project things based on the situations that you  
13 can't even account for but you don't control. It's  
14 inexcusable. You have absolutely no right to stand  
15 up there and say, "We're going to do the best we  
16 can." Not the best you can. You have to fix it.  
17 We have to fix it. I know that you'er human beings  
18 and you probably have good intentions. You're doing  
19 your job and I respect that, but your job is to  
20 listen to us. Your job is to make sure it gets done  
21 right. And I think it's absolutely disturbing.  
22 Think about your children. Think about your  
23 families. Think about our future and the legacies  
24 that we have to leave on this earth. It's -- you  
25 can't put a band-aid on it. You can't just say,

1 "You know what, this is good enough." 3,000 years  
2 ago, we're like looking at pyramids and we're, like,  
3 trying to figure out languages that people used and  
4 communication forms that people used 3,000 years  
5 ago. We can't even figure that out. And your  
6 saying, yeah, 24,000 years from now we're going to  
7 be able to communicate, "Don't go here. Don't mess  
8 with this." No. That's insane. It's insane. Fix  
9 it now. It's your responsibility. We support you.  
10 And if you choose not to, you're going to have to  
11 live with that and you're going to have to die with  
12 that. We all are. Not just you, we are all. That's  
13 the issue here. That is the issue. So that's all I  
14 have to say. Thank you.

15 **MR. NILES:** Other folks with comments?  
16 Gerry and then over here.

17 **GERRY POLLET:** I want to thank you all for  
18 sticking with this tonight and for coming out, so  
19 many people who have children at home. My name is  
20 Jerry Pollet with Heart of America Northwest. There  
21 is no way that I can imagine that Mr. Dowell and the  
22 regulators can hear heartfelt testimony that given  
23 tonight and come back and not say they've changed  
24 their plans. At least they can't do that and say  
25 we're responsive to the public. Thank you for being

1 here. Some of you got here tonight because someone  
2 else made a phone call to you. So please make sure  
3 you're on our list and maybe next time, if you have  
4 a chance, you can make some phone calls to other  
5 people you know to bring out to the next meeting.

6 I want to talk on behalf of -- in terms of  
7 testimony, let me just start -- Mr. Dowell tonight  
8 said, we will achieve the drinking levels standard,  
9 "at all costs." We will achieve at all costs.

10 1977 the federal government passed the amended clean  
11 water act banning the untreated water waste  
12 discharges the same type of discharges that continue  
13 at Hanford illegally for another 18 years, making  
14 this problem far worse. At that time, and through  
15 the late 1980s, when we started demanding an end to  
16 these charges, because before that they were secret.  
17 The mantra was, "It's too damn expensive," for the  
18 federal government to transport the waste. At all  
19 costs meant making bombs at all costs to help the  
20 environment. Being angry about this, well we've  
21 heard it so many times. It's hard to just be here  
22 and say calmly. Oh, now we'll trust at all costs.  
23 When the U.S. Department of Energy refused to end  
24 dumping of liquid waste without treatment, making  
25 these problems far worse. 18 years after the clean

1 water act amendment was made legal. And they  
2 continued until 2004 to dump solid radioactive waste  
3 for 43 miles, 11-mile soil trenches. Why? Because  
4 it was cheap. And why does the Energy Department  
5 say it's sitting with it's decision issued in 2004  
6 to add about 20,000 truckloads of radioactive waste  
7 to the landfill right near where all these sites  
8 are. With chemical waste as well as radioactive  
9 because it's cheaper than treating and disposing the  
10 underground disposing somewhere else.

11 Why do they want to dispose of that  
12 greater than Class C waste in Hanford? It's very  
13 clear. The documents that many of you came to the  
14 public hearing on laid it out. Hanford is the  
15 second cheapest place to dispose of that waste in  
16 near surface landfills. And the modeling for the  
17 first landfill we were just talking about shows,  
18 indeed, even with a liner it will leak and  
19 contaminate the groundwater. Chemicals and  
20 radionuclides. But trust us. This stuff won't move.  
21 Has no liner, but it won't move. At all costs, we  
22 will achieve drinking water standards. The only way  
23 to achieve is to retrieve. The only way to achieve  
24 it is to retrieve it. The PCB's in some of these  
25 sites are 100 to 150 times Washington's cleanup



1 level. The carbon tetrachloride at these sites is  
2 at astonishingly high levels. You can apply vapor  
3 extraction to that between now and eternity, and  
4 will still continue to contaminate the groundwater  
5 over and over and over again for 10,000 years. Same  
6 with the radioactive iodine and technetium and  
7 cesium will move -- these sites were located in  
8 places where the energy department also discharged  
9 hundreds of thousands of liters of really,  
10 incredibly good solvents from moving plutonium and  
11 cesium. And now that we are finally able to assess  
12 a feasibility study, which for most of this time  
13 period you couldn't even access and I appreciate  
14 that EPA last night said that the comment period  
15 would be extended to accommodate being able to  
16 review the studies. On that, one of the documents  
17 relied upon had this to say --

18 **MR. NILES:** Gerry, I want to just tell you  
19 we've got one more person waiting to speak.

20 **GERRY POLLET:** Okay. Unexpected high  
21 migration of plutonium in the past suggests possible  
22 unexpected exposures in the future. Plutonium  
23 americium have migrated to unexpected depths due to  
24 primarily to the unique features of the organic  
25 wastes disposed. The only way to protect the

1 groundwater, the only way to achieve protection of  
2 the groundwater is to retrieve. Thank you very  
3 much.

4 **MR. NILES:** I'm sorry, Gerry. I guess  
5 that person changed their mind. So it's 9:30. I  
6 guess we're about to lose our room. Thank you  
7 again, very much, for coming. We appreciate it  
8 greatly.

9 **(Whereupon, public meeting concluded at**  
10 **9:33 p.m.)**

## 1 CERTIFICATE

2  
3 I, Kimberly R. McLain, do hereby certify that  
4 to the Rules of Civil Procedure, the witness named herein  
5 appeared before me at the time and place set forth in the  
6 caption herein; that at the said time and place, I  
7 in stenotype all testimony adduced and other oral  
8 proceedings had in the foregoing matter; and that the  
9 foregoing transcript pages constitute a full, true and  
10 correct record of such testimony adduced and oral  
11 had and of the whole thereof.  
12

13 IN WITNESS HEREOF, I have hereunto set my hand this  
14 29th day of July, 2011.  
15  
16  
17  
18  
19

20 /Signed \_\_\_\_\_ December 2, 2012  
21 Kimberly R. McLain Commission Expiration  
22  
23  
24  
25

<u>\$</u>	<b>square</b>	508:1	463:15	431:14
<b>\$9,000</b>	419:2	514:13	<b>20,000</b>	<b>200-PW-3</b>
485:5	419:17	514:25	462:18	434:5
<u>1</u>	419:17	<b>1949</b>	515:6	<b>2011</b> 407:3
<b>1</b> 411:19	419:18	460:15	<b>200</b> 424:21	507:21
419:15	482:3	<b>1959</b>	424:22	508:14
<b>1,000</b>	<b>110</b>	494:12	424:24	508:17
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